GN70-B7086

Service Engineer's Manual

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FCC Declaration

Notice for the USA
Compliance Information Statement (Declaration of Conformity Procedure) DoC FCC Part 15: This device complies with part 15 of the FCC Rules

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

- This device must not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesirable operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice for Canada

This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada.

Notice for Europe (CE Mark)
This product is in conformity with the Council Directive 2004/108/EC.

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. There will be danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

About this Manual

This manual provides you with instructions on installing your TYAN GN70-B7086. This Manual is intended for experienced users and integrators with hardware knowledge of personal computers.

This manual consists of the following parts:

Chapter1: Provides an introduction to the TYAN GN70-B7086 barebones, standard parts list, describes the external components, gives a table of key components, and provides block diagram of the system.

Chapter2: Covers procedures on installing the processor, memory modules and hard drives.

Chapter3: Covers the removal and replacement procedures for pre-installed components.

Appendix: List the cable connection and FRU part tables for reference of system setup, and technical support in case a problem arises with your system.

Safety and Compliance Information

Before installing and using TYAN GN70-B7086, take note of the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Do not block the slots and opening on the unit, which are provided for ventilation.
- Only use the power source indicated on the marking label. If you are not sure, contact the power company.
- The unit uses a three-wire ground cable, which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
- Do not place anything on the power cord. Place the power cord where it will not be in the way of foot traffic.
- Follow all warnings and cautions in this manual and on the unit case.
- Do not push objects in the ventilation slots as they may touch high voltage components and result in shock and damage to the components.
- When replacing parts, ensure that you use parts specified by the manufacturer.
- When service or repairs have been done, perform routine safety checks to verify that the system is operating correctly.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- Cover the unit when not in use.

Safety Information

Retain and follow all product safety and operating instructions provided with your equipment. In the event of a conflict between the instructions in this guide and the instructions in equipment documentation, follow the guidelines in the equipment documentation.

Observe all warnings on the product and in the operating instructions. To reduce the risk of bodily injury, electric shock, fire and damage to the equipment, observe all precautions included in this guide.

You must become familiar with the safety information in this guide before you install, operate, or service TYAN products.

Symbols on Equipment

	Caution. This symbol indicates a potential hazard. The potential for injury exists if cautions are not observed. Consult equipment documentation for specific details.
	Warning. This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.
	Warning. This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists. To reduce risk of injury from a hot component, allow the surface to cool before touching.

General Precautions

- Follow all caution and warning instructions marked on the equipment and explained in the accompanying equipment documentation.

Machine Room Environment

- Make sure that the area in which you install the system is properly ventilated and climate-controlled.

- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the electrical rating label of the equipment.
- Do not install the system in or near a plenum, air duct, radiator, or heat register.
- Never use the product in a wet location.

Equipment Chassis

- Do not block or cover the openings to the system.
- Never push objects of any kind through openings in the equipment. Dangerous voltages might be present.
- Conductive foreign objects can produce a short circuit and cause fire, electric shock, or damage to your equipment.
- Lift equipment using both hands and with your knees bent.

Equipment Racks

To avoid injury or damage to the equipment:

- Observe local occupational health and safety requirements and guidelines for manual materials handling.
- Do not attempt to move a rack by yourself; a minimum of two people are needed to move a rack.
- Do not attempt to move a fully loaded rack. Remove equipment from the rack before moving it.
- Do not attempt to move a rack on an incline that is greater than 10 degrees from the horizontal.
- Make sure the rack is properly secured to the floor or ceiling.
- Make sure the stabilizing feet are attached to the rack if it is a single-rack installation.
- Make sure racks are coupled together if it is a multiple-rack installation.
- Make sure the rack is level and stable before installing an appliance in the rack.
- Make sure the leveling jacks are extended to the floor.

- Make sure the full weight of the rack rests on the leveling jacks.
- Always load the rack from the bottom up. Load the heaviest component in the rack first.
- Make sure the rack is level and stable before pulling a component out of the rack.
- Make sure only one component is extended at a time. A rack might become unstable if more than one component is extended.

To avoid damage to the equipment:

- The rack width and depth must allow for proper serviceability and cable management.
- Ensure that there is adequate airflow in the rack. Improper installation or restricted airflow can damage the equipment.
- The rack cannot have solid or restricted airflow doors. You must use a mesh door on the front and back of the rack or remove the doors to ensure adequate air flow to the system.
- If you install the Model in a rack, do not place equipment on top of the unit. It will cause restricted airflow and might cause damage to the equipment.
- Make sure the product is properly matted with the rails. Products that are improperly matted with the rails might be unstable.
- Verify that the AC power supply branch circuit that provides power to the rack is not overloaded. This will reduce the risk of personal injury, fire, or damage to the equipment. The total rack load should not exceed 80 percent of the branch circuit rating. Consult the electrical authority having jurisdiction over your facility wiring and installation requirements.

Equipment Power Cords

- Use only the power cords and power supply units provided with your system. The system might have one or more power cords.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- In all European electrical environments, you must ground the Green/Yellow tab on the power cord. If you do not ground the Green/Yellow tab, it can cause an electrical shock due to high leakage currents.
- Do not place objects on AC power cords or cables. Arrange them so that no

one might accidentally step on or trip over them.

- Do not pull on a cord or cable. When unplugging from the electrical outlet, grasp the cord by the plug.

- To reduce the risk of electrical shock, disconnect all power cords before servicing the appliance.

Equipment Batteries

- The system battery contains lithium manganese dioxide. If the battery pack is not handled properly, there is risk of fire and burns.

- Do not disassemble, crush, puncture, short external contacts, or dispose of the battery in fire or water.

- Do not expose the battery to temperatures higher than 60°C (140°F).

- The system battery is not replaceable. If the battery is replaced by an incorrect type, there is danger of explosion. Replace the battery only with a spare designated for your product.

- Do not attempt to recharge the battery.

- Dispose of used batteries according to the instructions of the manufacturer. Do not dispose of batteries with the general household waste. To forward them to recycling or proper disposal, use the public collection system or return them to TYAN, your authorized TYAN partner, or their agents.

Equipment Modifications

- Do not make mechanical modifications to the system. TYAN is not responsible for the regulatory compliance of TYAN equipment that has been modified.

Equipment Repairs and Servicing

- The installation of internal options and routine maintenance and service of this product should be performed by individuals who are knowledgeable about the procedures, precautions, and hazards associated with equipment containing hazardous energy levels.

- Do not exceed the level of repair specified in the procedures in the product documentation. Improper repairs can create a safety hazard.

- Allow the product to cool before removing covers and touching internal

components.

- Remove all watches, rings, or loose jewelry when working before removing covers and touching internal components.
- Do not use conductive tools that could bridge live parts.
- Use gloves when you remove or replace system components; they can become hot to the touch.
- If the product sustains damage requiring service, disconnect the product from the AC electrical outlet and refer servicing to an authorized service provider. Examples of damage requiring service include:

– The power cord, extension cord, or plug has been damaged.

– Liquid has been spilled on the product or an object has fallen into the product.

– The product has been exposed to rain or water.

– The product has been dropped or damaged.

– The product does not operate normally when you follow the operating instructions.

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1.5 About the TYAN GN70-B7086

Congratulations on your purchase of the TYAN® GN70-B7086, a highly optimized rack-mountable barebone system. The GN70-B7086 is designed to support dual Intel® Xeon® E5-2600v3 series (HSW-EP) Processors and up to up to 32GB RDIMM and 64GB LRDIMM and 128GB LRDIMM 3DS* DDR4 memory for each DIMM slot, providing a rich feature set and incredible performance. Leveraging advanced technology from Intel®, the GN70-B7086 server system is capable of offering scalable 32 and 64-bit computing, high bandwidth memory design, and lightning-fast PCI-E bus implementation. The GN70-B7086 not only empowers your company in nowadays IT demand but also offers a smooth path for future application usage.

TYAN® also offers the GN70-B7086 in a version that can support up to eight 3.5" or 2.5" hot-swap hard drives. The GN70-B7086 uses TYAN's latest chassis featuring a robust structure and a solid mechanical enclosure. All of this provides GN70-B7086 the power and flexibility to meet the needs of nowadays server application.

1.2 Product Models

Model	HDD Bays	Motherboard
B7086G70V6E2HR	Hot-swap, 8HDDs	S7086GM3NRE
B7086G70V8HR	Hot-swap, 8HDDs	S7086GM3NR

1.3 Features

TYAN GN70B7086 (B7086G70V6E2HR)

System	Form Factor	2U Rackmount
	Gross Weight	25 kg
	Chassis Model	GN70
	Dimension (D x W x H)	27.56” x 17.72” x 3.43” (700 x 450 x 87mm)
	Motherboard	S7086GM3NRE
	Board Dimension	EATX, 12”x13” (305x330mm)
Front Panel	Buttons	(1) RST / (1) ID / (1) PWR w/ LED
	LEDs	(1) PWR / (1) ID / (1) Warning / (3) LAN
	I/O Ports	(2) USB ports
External Drive Bay	Type / Q’ty	2.5” or 3.5” Hot-Swap / (8)
	HDD backplane support	SATA 6Gb/s/ SAS 12Gb/s
	Supported HDD Interface	(2) Mini-SAS HD for 8ports NVMe devices (PCI-E x4 single)
System Cooling Configuration	FAN	(4) 6cm fans
Power Supply	Type	ERP1U
	Efficiency	80 plus gold
	Redundancy	1+1
	Serviceability	Hot-swap
	Input Range	100-127V AC/10A / 200-240V AC/5A
	Frequency	50/60 Hertz
	Output Watts	770 Watts
Processor	Supported CPU Series	Intel Xeon Processor E5-2600 v3 series processors
	Socket Type / Q’ty	LGA2011 / (2)
	Thermal Design Power (TDP) wattage	Max up to 145W
	System Bus	Up to 9.6/ 8.0/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support
Chipset	PCH	Intel C612
Memory	Supported DIMM Qty	(8)+(8) DIMM slots
	DIMM Type / Speed	RDIMM DDR4 2133/1866/1600 / LRDIMM DDR4 2133/1600 / LRDIMM 3DS DDR4 2133/1600
	Capacity	Up to 512GB RDIMM/ 1,024GB LRDIMM/ 2,048GB LRDIMM 3DS *Follow latest Intel DDR4 Memory POR

	Memory channel		4 Channels per CPU
Expansion Slots	**PCI-E**		(6) PCI-E Gen3 x16 slots (w/ x8 link)
	Note:		(1) OCP slot for Mezz Card/ (1) Proprietary slot for SAS Mezz Card/ (4) PCI-E Gen3 x4 in MiniSAS HD for NVMe devices(TYAN Proprietary)
	Recommended TYAN OCP Card		M7062-B811-1T, PCI-E Gen3 x8, Broadcom 10GbE Mezz Card / M7062-B810-2T, PCI-E Gen3 x8, Broadcom 10GbE Mezz Card / M7076-X540-2T, PCI-E Gen3 x8, Intel 10GbE Mezz Card / M7076-3108-8I, PCI-E Gen3 x8, LSI SAS 12G Mezz Card / M7094-2308G-8I, PCI-E Gen3 x8, LSI SAS 6G Mezz Card / M7076-3008-8I, PCI-E Gen3 x8, LSI SAS 12G Mezz Card / M7076-I350, PCI-E Gen3 x8, Intel (2)GbE Mezz Card / M7062-I599-1T, PCI-E Gen3 x8, Intel 10GbE Mezz Card / M7062-I599-2T, PCI-E Gen3 x8, Intel 10GbE Mezz Card
	Pre-install TYAN Riser Card		M7056-L24-3F / M7056-R24-3F
LAN	**Port Q'ty**		(3) GbE ports
	Controller		Intel I350-AM2 / Intel I210
Storage	**SATA**	**Connector**	(1) Mini-SAS (4-ports) + (2) SATA (totally support 6 ports)
		Controller	Intel C612
		Speed	6.0 Gb/s
		RAID	RAID 0/1/10/5 (Intel RST)
	SSATA	**Connector**	(1) Mini-SAS (4-ports)
		Controller	Intel C612
		Speed	6.0 Gb/s
		RAID	RAID 0/1/10/5 (Intel RST) only for 4 SATA devices
Graphic	**Connector type**		D-Sub 15-pin
	Resolution		Up to 1920x1200
	Chipset		Aspeed AST2400
I/O Ports	**USB**		(4) ports (2 at front, 4 at rear)
	COM		(1) DB-9 COM port
	VGA		(1) D-Sub 15-pin port
	RJ-45		(3) ports (1 port shared with IPMI)
System Monitoring	**Chipset**		Aspeed AST2400
	Voltage		Monitors voltage for CPU, memory, chipset & power supply
	Temperature		Monitors temperature for CPU & memory & system environment
	LED		Over temperature warning indicator / Fan & PSU fail LED indicator
	Others		Chassis intrusion detection / Watchdog timer support
Server	**Onboard Chipset**		Onboard Aspeed AST2400

Management	**AST2400 IPMI Feature**	IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub
	AST2400 iKVM Feature	24-bit high quality video compression / 10/100 Mb/s MAC interface
BIOS	**Brand / ROM size**	AMI / 16MB
	Feature	User-configurable H/W monitoring / SMBIOS 2.7/PnP/Wake on LAN / PXE boot support / ACPI 3.0/ACPI sleeping states S1,S4,S5
Operating System	**OS supported list**	Please refer to our Intel OS supported list.
Regulation	**FCC (DoC)**	Class A
	CE (DoC)	Yes
Operating Environment	**Operating Temp.**	10° C ~ 35° C (50° F~ 95° F)
	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)
	In/Non-operating Humidity	90%, non-condensing at 35° C
RoHS	**RoHS 6/6 Compliant**	Yes
Package Contains	**Barebone**	(1) GN70-B7086 Barebone
	Manual	(1) Web User's manual / (1) Quick Installation Guide
	Installation CD	(1) TYAN installation CD

TYAN GN70B7086 (B7086G70V8HR)

System	**Form Factor**	2U Rackmount
	Gross Weight	25 kg
	Chassis Model	GN70
	Dimension (D x W x H)	27.56" x 17.72" x 3.43" (700 x 450 x 87mm)
	Motherboard	S7086GM3NRE
	Board Dimension	EATX, 12"x13" (305x330mm)
Front Panel	**Buttons**	(1) RST / (1) ID / (1) PWR w/ LED
	LEDs	(1) PWR / (1) ID / (1) Warning / (3) LAN
	I/O Ports	(2) USB ports
External Drive Bay	**Type / Q'ty**	2.5" or 3.5" Hot-Swap / (8)
	HDD backplane support	SAS / SATA 6.0Gb/s
	Supported HDD Interface	(2) Mini-SAS (8ports w/ SATA 6Gb/s/ SAS 12Gb/s)
System Cooling Configuration	**FAN**	(4) 6cm fans
Power Supply	**Type**	ERP1U

	Efficiency		80 plus gold
	Redundancy		1+1
	Serviceability		Hot-swap
	Input Range		100-127V AC/10A / 200-240V AC/5A
	Frequency		50/60 Hertz
	Output Watts		770 Watts
Processor	**Supported CPU Series**		Intel Xeon Processor E5-2600 v3 series processors
	Socket Type / Q'ty		LGA2011 / (2)
	Thermal Design Power (TDP) wattage		Max up to 145W
	System Bus		Up to 9.6/ 8.0/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support
Chipset	**PCH**		Intel C612
Memory	**Supported DIMM Qty**		(8)+(8) DIMM slots
	DIMM Type / Speed		RDIMM DDR4 2133/1866/1600 / LRDIMM DDR4 2133/1600 / LRDIMM 3DS DDR4 2133/1600
	Capacity		Up to 512GB RDIMM/ 1,024GB LRDIMM/ 2,048GB LRDIMM 3DS *Follow latest Intel DDR4 Memory POR
	Memory channel		4 Channels per CPU
Expansion Slots	**PCI-E**		(6) PCI-E Gen3 x16 slots (w/ x8 link)
	Note:		(1) OCP slot for Mezz Card/ (1) Proprietary slot for SAS Mezz Card
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	Pre-install TYAN Riser Card		M7056-L24-3F / M7056-R24-3F
LAN	**Port Q'ty**		(3) GbE ports
	Controller		Intel I350-AM2 / Intel I210
Storage	**SATA**	**Connector**	(1) Mini-SAS (4-ports) + (2) SATA (totally support 6 ports)
		Controller	Intel C612
		Speed	6.0 Gb/s
		RAID	RAID 0/1/10/5 (Intel RST)

	SSATA	Connector	(1) Mini-SAS (4-ports)
		Controller	Intel C612
		Speed	6.0 Gb/s
		RAID	RAID 0/1/10/5 (Intel RST) only for 4 SATA devices
Graphic	Connector type		D-Sub 15-pin
	Resolution		Up to 1920x1200
	Chipset		Aspeed AST2400
I/O Ports	USB		(4) ports (2 at front, 4 at rear)
	COM		(1) DB-9 COM port
	VGA		(1) D-Sub 15-pin port
	RJ-45		(3) ports (1 port shared with IPMI)
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	Voltage		Monitors voltage for CPU, memory, chipset & power supply
	Temperature		Monitors temperature for CPU & memory & system environment
	LED		Over temperature warning indicator / Fan & PSU fail LED indicator
	Others		Chassis intrusion detection / Watchdog timer support
Server Management	Onboard Chipset		Onboard Aspeed AST2400
	AST2400 IPMI Feature		IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub
	AST2400 iKVM Feature		24-bit high quality video compression / 10/100 Mb/s MAC interface
BIOS	Brand / ROM size		AMI / 16MB
	Feature		User-configurable H/W monitoring / SMBIOS 2.7/PnP/Wake on LAN / PXE boot support / ACPI 3.0/ACPI sleeping states S1,S4,S5
Operating System	OS supported list		Please refer to our Intel OS supported list.
Regulation	FCC (DoC)		Class A
	CE (DoC)		Yes
Operating Environment	Operating Temp.		10° C ~ 35° C (50° F~ 95° F)
	Non-operating Temp.		- 40° C ~ 70° C (-40° F ~ 158° F)
	In/Non-operating Humidity		90%, non-condensing at 35° C
RoHS	RoHS 6/6 Compliant		Yes
Package Contains	Barebone		(1) GN70-B7086 Barebone
	Manual		(1) Web User's manual / (1) Quick Installation Guide
	Installation CD		(1) TYAN installation CD

1.4 Standard Parts List

This section describes GN70-B7086 package contents and accessories. Open the box carefully and ensure that all components are present and undamaged. The product should arrive packaged as illustrated below.

1.4.1 Box Contents

Component	Description
	2U chassis, (8) hot swap HDD bays
	TYAN® S7086 system board (pre-installed)
	(1+1) Redundant Power Supply,770W DELTA DPS-770GB C
	(4) System fan
	M1601T70-D-PDB Power Distribution Board (pre-installed)
	HDD BP M1276G70-BP12E-8 /M1276G70-BP12-8 (pre-installed)
	M1709G70-FPB (pre-installed)
	M7056-L24-3F riser card (pre-installed)
	M7056-R24-3F riser card (pre-installed)
	M1806G70-FB (pre-installed)

1.4.2 Accessories

If any items are missing or appear damaged, contact your retailer or browse to TYAN®'s website for service: http://www.tyan.com
The web site also provides information of other TYAN® products, as well as FAQs, compatibility lists, BIOS settings, etc.

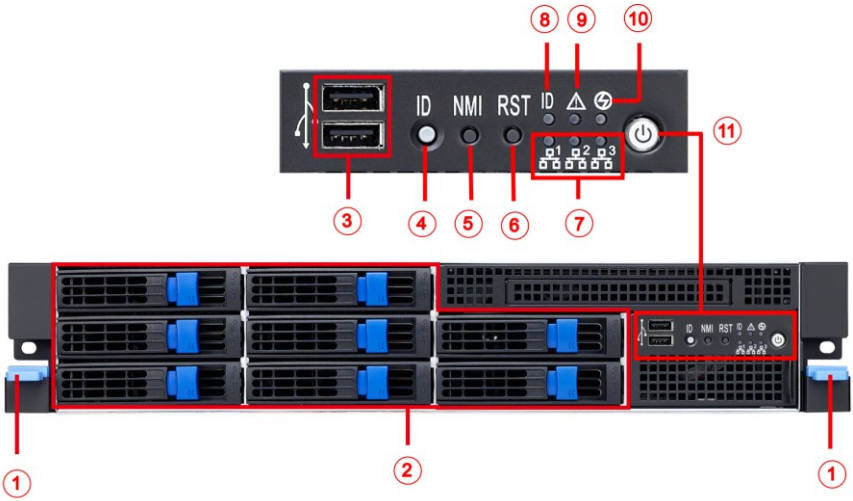
TYAN® Motherboard Drive CD	Heatsink x 2
Screw Pack x 3	Rail Kit
DVD Bracket Kit x 1	AC Power Cord 125V (US) x 2
AC Power Cord 250V (Europe) x 2	Barebone Manual

Addendum for China Use Only	

1.5 About the Product

The following views show you the product.

1.5.1 System Front View



HDD Sequence

HDD0	HDD3	
HDD1	HDD4	HDD6
HDD2	HDD5	HDD7

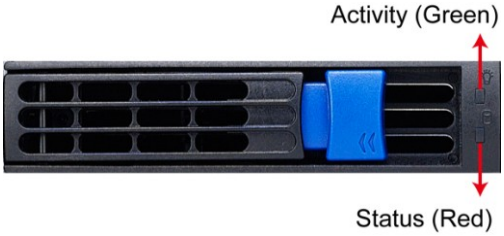
1	**Ears**
2	**3.5” /2.5” HDD bays**
3	**USB Ports**
4	**ID Button**
5	**NMI Button**
6	**RESET Button**
7	**LAN1/LAN2/LAN3**
8	**ID LED**
9	**System Fan Fail LED**
10	**System Warning LED**
11	**Power On/OFF Button with LED**

LED Definitions

LED	Status	LED Color	Behavior	Remark
Power LED	Power on	Green	Solid on	
	Power off		Off	
System Warning LED	Normal	Amber	Off	
	Warning		Solid on	All BMC warning PSU alert, PSU fail
System Fan Fail	Normal	Red	Off	
	System Fan Fail		Solid on	System Fan fail warning
ID LED	Normal	Blue	Off	
	Located		Solid on	Local and remote
LAN1 LAN2 LAN3	Off line	Green	Off	
	Link		Solid on	
	Activity		Blinking	

PSU Redundancy 1+1 System Warning LED Indication

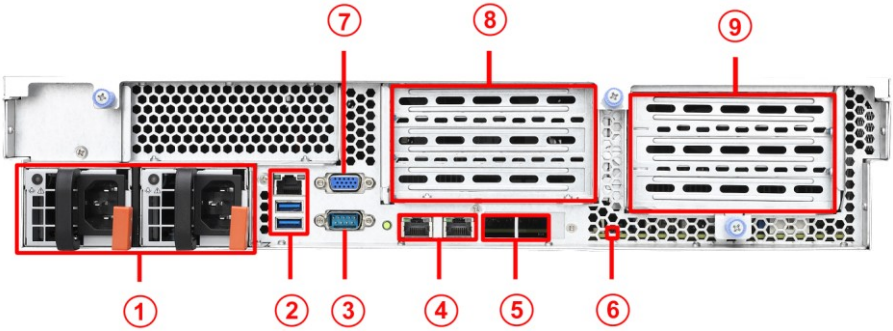
Status	System Warning LED
2 PSU and 2 PSU AC cords are connected.	Off
1 PSU and 1 PSU AC cord are connected.	Amber solid on
2 PSU and 2 PSU AC cords are connected. After system is powered on, disconnect 1 PSU AC cord.	Amber solid on
2 PSU and 2 PSU AC cords are connected. After system is powered on, disconnect 1 PSU.	Amber solid on



HDD LED Behavior

HDD Drive State		Activity LED Color: Green	Status LED Color: Red
No Driver Present or power disconnected		OFF	OFF
Driver Present	No Activity	Solid ON	OFF
	Access Activity	Blinking	OFF
HDD Drive Fail		Don't care	Solid ON
RAID Rebuild		Don't care	Blinking @ 4Hz
HDD Drive Locate Identifier		Don't care	Blinking @ 1Hz

1.5.2 System Rear View



1	Power Supply
2	LAN3 (shared with IPMI) + 2 USB
3	COM Port
4	LAN2 (left) + LAN1 (right)
5	OCP card ports(Reserved)
6	ID LED
7	VGA Port
8/9	PCI-E Slots

10/100/1000 Mbps LAN Link/Activity LED Scheme			
		Left LED (Link/Activity)	Right LED (Speed)
No Link		OFF	OFF
10 Mbps	Link	Solid Green	OFF
	Active	Blinking Green	OFF
100 Mbps	Link	Solid Green	Solid Green
	Active	Blinking Green	Solid Green
1000 Mbps (1Gbps)	Link	Solid Green	Solid Yellow
	Active	Blinking Green	Solid Yellow

NOTE: "Left" and "Right" are viewed from the rear panel.

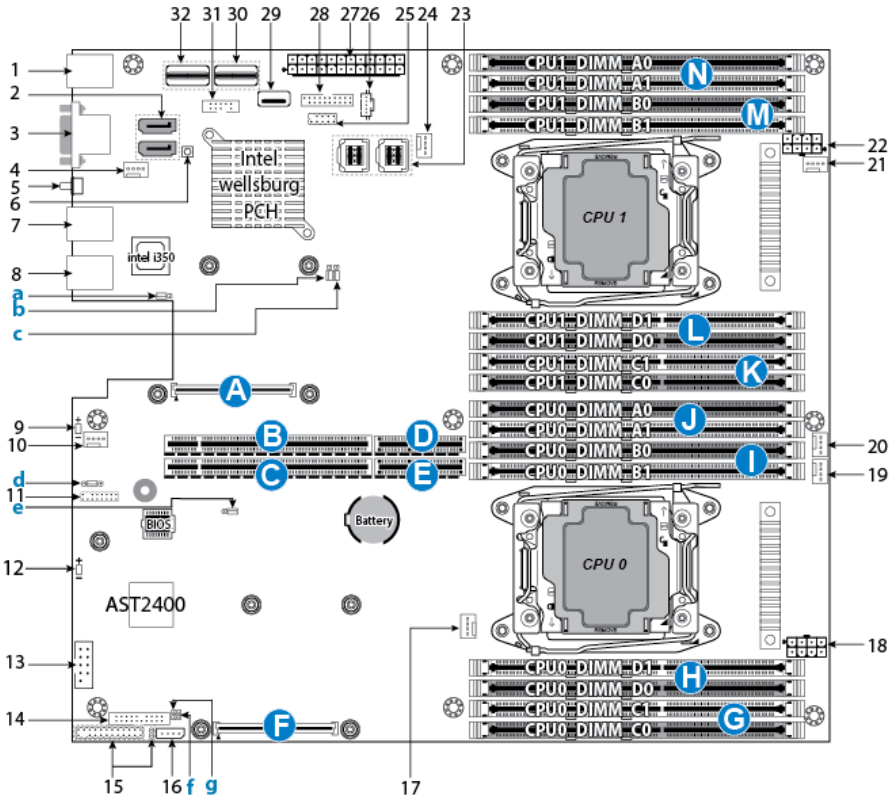
NOTE:

1. I350 LAN chip is support on LAN1 and LAN2 can up to 1Gbps.
2. I210 LAN chip is support on LAN3 can up to 1Gbps.
3. Peripheral devices can be plugged straight into any of these ports but software may be required to complete the installation.

ID LED

LED	Status	LED Color	Behavior	Remark
ID LED	Normal	Blue	Off	
	Located		Solid on	Local and remote

1.5.3 Motherboard (S7086) Layout



This diagram is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above diagram. The DIMM slot numbers shown above can be used as a reference when reviewing the DIMM population guidelines shown later in the manual. For the latest board revision, please visit our web site at http://www.tyan.com.

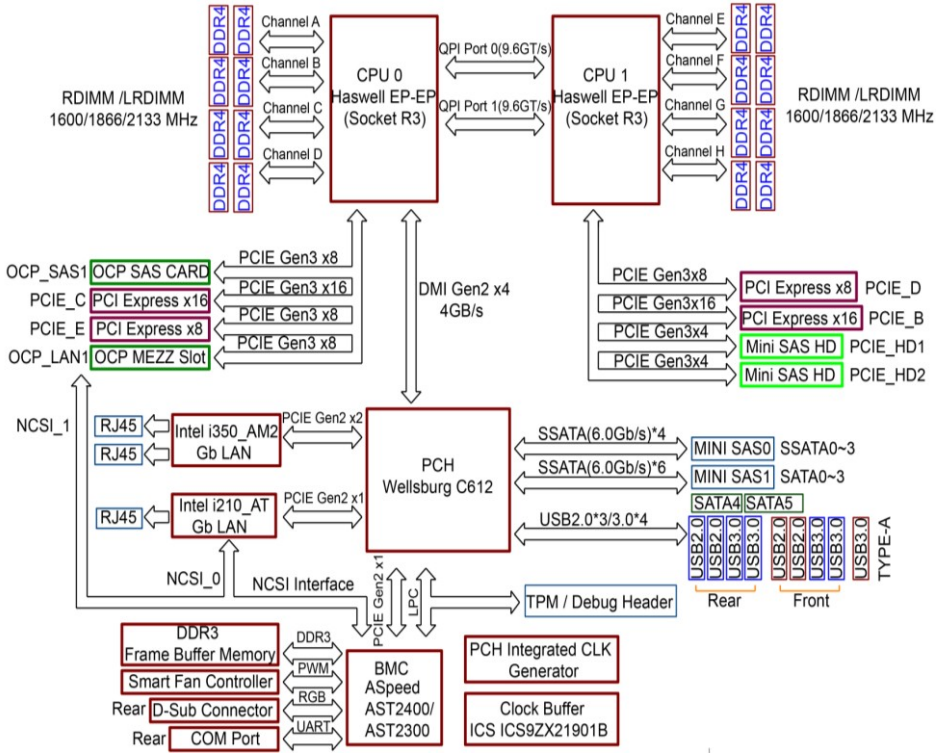
1.5.4 Jumpers & Connectors

Connectors	
1. LAN port#3 (IPMI) and USB 3.0 ports	17. 4-pin Fan Connector(CPU0_FAN)
2. 7-pin vertical SATA 3.0 Connector (SATA5,upper/SATA4 down)	18. 8-pin Power Connector(PW2)
3. VGA Port / COM Port	19. 4-pin Fan Connector(SYS_FAN3)
4. 4-pin Fan Connector(SYS_FAN4)	20. 4-pin Fan Connector(SYS_FAN2)
5. ID Button(SW2)	21. 4-pin Fan Connector (SYS_FAN1)
6. Clear Button(SW1)	22. 8-pin Power Connector(PW3)
7. LAN Port#1(LAN1)	23. PCIE Header (PCIEx4 From CPU1 SAS HD1,right/ SAS HD2,left)
8. LAN Port#2(LAN2)	24. 4-pin Fan Connector(CPU1_FAN)
9. ID LED	25.USB 2.0 Header(USB2_HD1)
10. 4-pin Fan Connector(SYS_FAN5)	26.PSMI Connector(PSMI_HD1)
11. TYAN Module Header	27. 24-pin Power Connector(PW1)
12. BMC LED	28. USB 3.0 Header(USB3_HD1)
13. COM Port(COM2)	29. TYPE_A USB Header(TYPEA_USB3)
14. Fan IO Header(FAN_HD1)	30. 4-in-1 Mini SAS Connector(SSATA0-3)
15. Front Panel Header(FP_HD1)/LAN2 LED Header(LAN_LED_HD1)	31. PCH SATA SGPIO Header(SGPIO1,SATA0-5)
16. IPMB Connector(IPMB_HD1)	32. 4-in-1 Mini SAS Connector(SATA0-3)
Headers/Jumpers	
a. PSU Alert Disable Jumper (3PHD_9)	e. MIC Card Jumper (3PHD_3)
b. BIOS Security Jumper(3PHD_4)	f. ID_LED Button Header (2PHD_2)
c. ME Recovery Mode Jumper (3PHD_6)	g. Chassis Intrusion Header (2PHD_1)
d. Buzzer Disable Jumper (4PHD_1)	
Slots	
A. PCI-E Gen3 x8 MEZZ slot f/ CPU0 for LAN card	**CPU0 DIMM G/H/I/J**
B. PCI-E Gen3 x16 slot(x16 link) f/ CPU1	**CPU1 DIMM K/L/M/N**
C. PCI-E Gen3 x16 slot(x16 link) f/ CPU0	
D. PCI-E Gen3 x4 slot(x8 link) f/ CPU1	
E. PCI-E Gen3 x4 slot(x8 link) f/ CPU0	
F. PCI-E Gne3 x8 MEZZ Slot f/ CPU0 for SAS card	

Jumper Legend

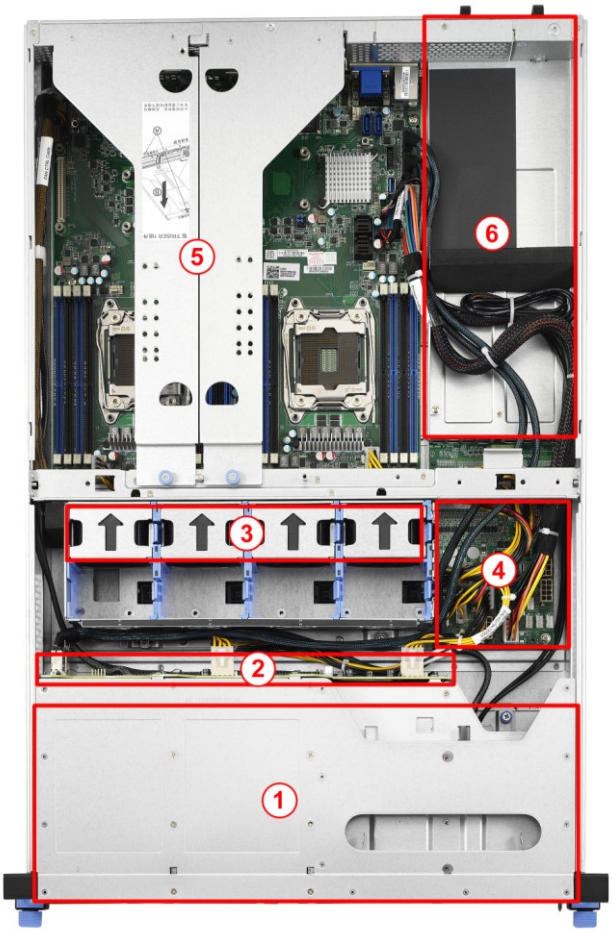
	OPEN - Jumper OFF	**Without jumper cover**
	CLOSED - Jumper ON	**With jumper cover**

1.5.5 System Block Diagram (S7086)



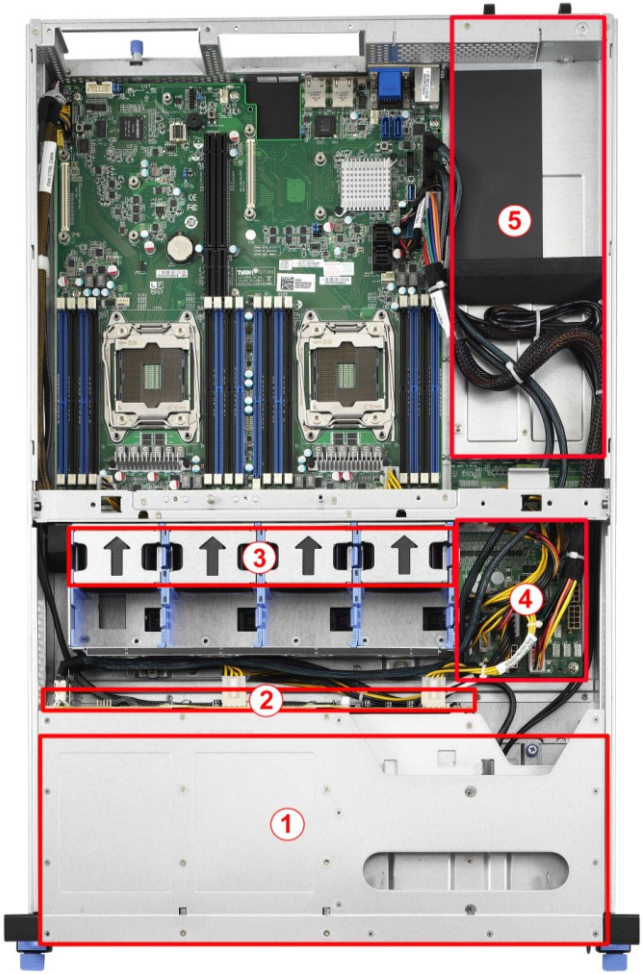
1.5.6 Internal View

With Riser Card Brackets



1	3.5”/2.5” HDD cage (underneath)
2	SAS/SATA HDD Backplane Board
3	System Fan Unit
4	Power Distribution Board
5	PCI-E Riser Card Bracket
6	Power Supply (underneath)

Without Riser Card Brackets



1	3.5”/2.5” HDD cage (underneath)
2	SAS/SATA HDD Backplane Board
3	System Fan Unit
4	Power Distribution Board
5	Power Supply (underneath)

NOTE

2.0.1 Before you Begin

This chapter explains how to install the CPUs, CPU heatsinks, memory modules, and hard drives. Instructions on inserting add on cards are also given.

2.0.2 Work Area

Make sure you have a stable, clean working environment. Dust and dirt can get into components and cause malfunctions. Use containers to keep small components separated. Putting all small components in separate containers prevents them from becoming lost. Adequate lighting and proper tools can prevent you from accidentally damaging the internal components.

2.0.3 Tools

The following procedures require only a few tools, including the following:

- A cross head (Phillips) screwdriver
- A grounding strap or an anti-static pad

Most of the electrical and mechanical connections can be disconnected with your hands. It is recommended that you do not use pliers to remove connectors as it may damage the soft metal or plastic parts of the connectors.

Caution!

1. To avoid damaging the motherboard and associated components, do not use torque force greater than 7kgf/cm (6.09 lb/in) on each mounting screw for motherboard installation.
2. Do not apply power to the board if it has been damaged.

2.0.4 Precautions

Components and electronic circuit boards can be damaged by discharges of static electricity. Working on a system that is connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to GN70-B7086 or injury to yourself.

- Ground yourself properly before removing the top cover of the system. Unplug the power from the power supply and then touch a safely grounded object to release static charge (i.e. power supply case). If available, wear a grounded wrist strap. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Avoid touching motherboard components, IC chips, connectors, memory modules, and leads.
- The motherboard is pre-installed in the system. When removing the motherboard, always place it on a grounded anti-static surface until you are ready to reinstall it.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress circuit boards.
- Leave all components inside the static-proof packaging that they ship with until they are ready for installation.
- After replacing optional devices, make sure all screws, springs, or other small parts are in place and are not left loose inside the case. Metallic parts or metal flakes can cause electrical shorts.

CAUTION: Please note that the following illustrations may not look exactly like the rackmount server you purchased. Therefore, the illustrations should be held for your reference only.

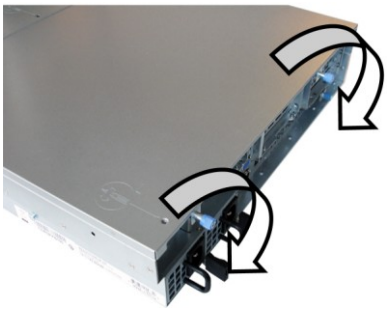
2.1 Installing Motherboard Components

This section describes how to install components on to the motherboard, including CPUs, memory modules, HDD and PCI-E cards.

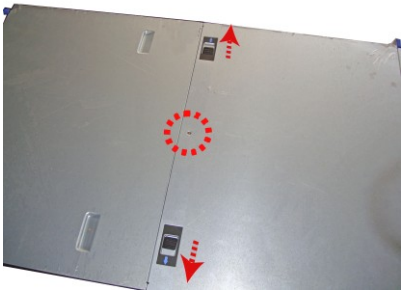
2.1.1 Removing the Chassis Cover

Follow these instructions to remove the GN70-B7086 chassis cover.

1. Unscrew the rear top cover on the back side.



2. Unscrew the front top cover and pull the latches aside to lift up the top cover.

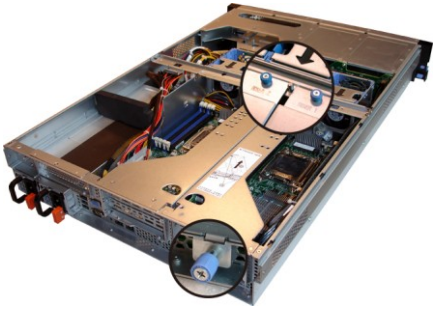


3. Slide the rear top cover out.

2.1.2 Removing the Riser Card Brackets

Follow these instructions to remove the PCI-E Riser Card Brackets.

1. Loose three thumb screws to release the PCI-E Riser Card Brackets.

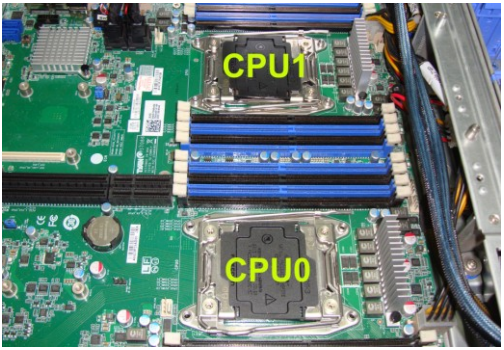


2. Lift up the Riser Card Brackets.

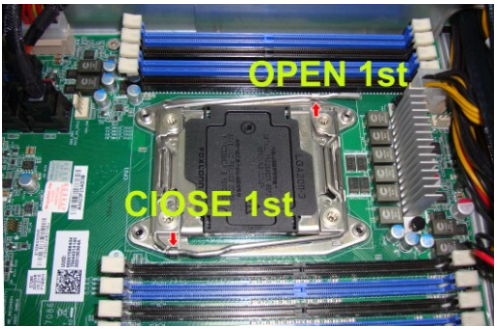
2.1.3 Installing the CPU and Heatsink

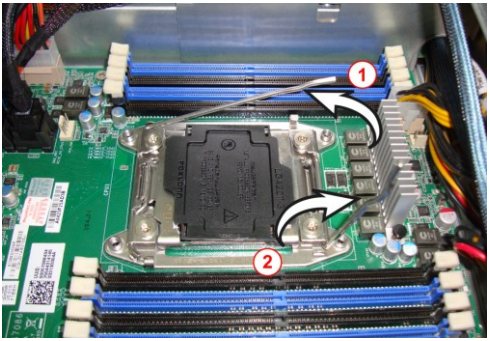
Follow the steps below on installing CPUs and CPU heatsinks.

1. Locate the CPU sockets. Always start with CPU0 first.



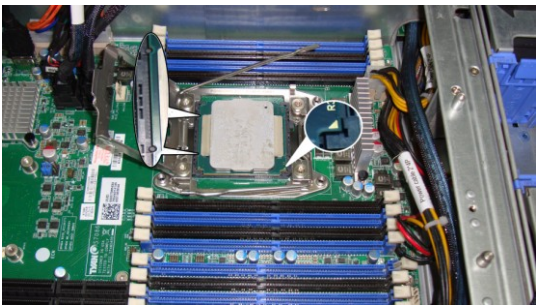
2. Pull the first and second levers slightly away from the socket and then push them to a fully open position.



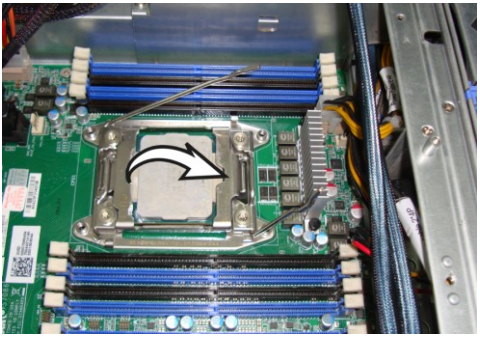


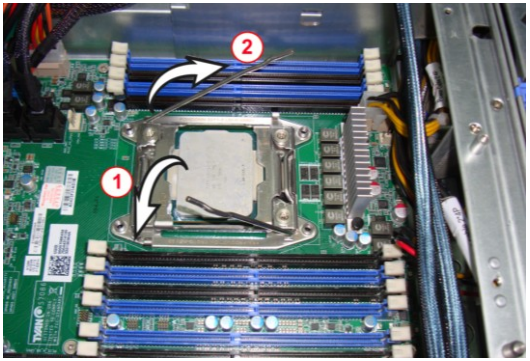
3. Push the CPU socket cover to a fully open position. Take out the protection cap

4. Place the CPU into the socket and make sure that the gold arrow is located in the right direction.

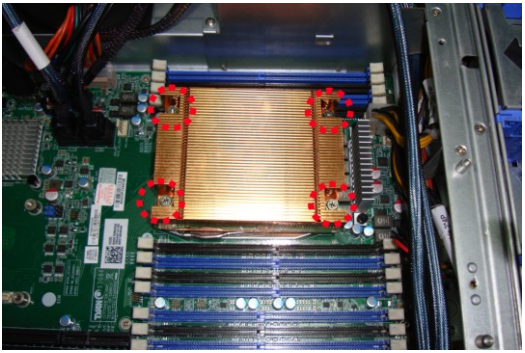


5. Close the CPU socket cover and press the levers down to secure the CPU.





6. Position the heatsink on top of the CPU and secure it with 4 screws.

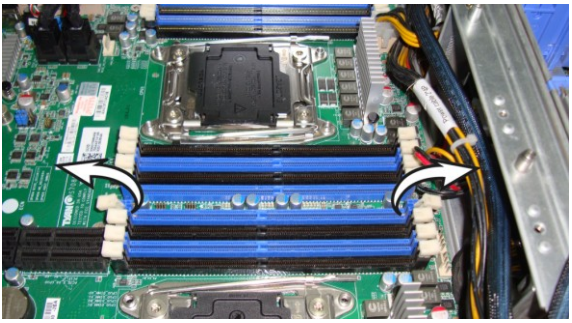


7. Repeat the procedures mentioned earlier to install the second CPU and heatsink.

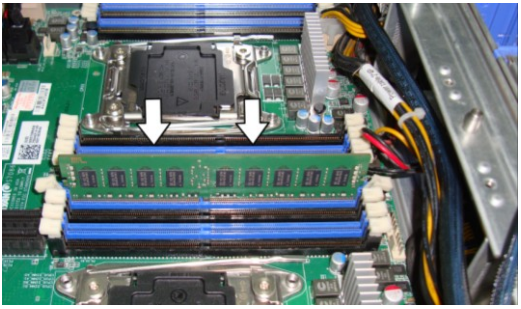
2.1.4 Installing the Memory

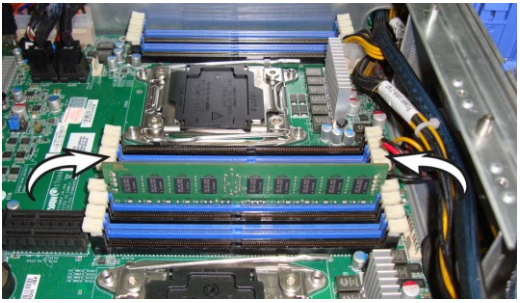
Follow these instructions to install the memory modules onto the motherboard.

1. Locate the memory slots on the motherboard.
2. Press the memory slot locking levers in the direction of the arrows as shown in the following illustration.



3. Align the memory module with the slot. When inserted properly, the memory slot locking levers lock automatically onto the indentations at the ends of the module. Follow the recommended memory population table to install the other memory modules.





Memory Population Option Table

Recommended Memory Population Table(Single CPU)

	Single CPU Installed (CPU0 only)					
Quantity of memory installed	**1**	**2**	**3**	**4**	**6**	**8**
CPU0_DIMM_A0	√	√	√	√	√	√
CPU0_DIMM_A1					√	√
CPU0_DIMM_B0		√	√	√	√	√
CPU0_DIMM_B1					√	√
CPU0_DIMM_C0				√	√	√
CPU0_DIMM_C1						√
CPU0_DIMM_D0			√	√	√	√
CPU0_DIMM_D1						√

NOTE:

1. √ indicates a populated DIMM slot.
2. Use paired memory installation for max performance.
3. Populate the same DIMM type in each channel, specifically
   - Use the same DIMM size
   - Use the same # of ranks per DIMM

Recommended Memory Population Table (Dual CPU)

	Dual CPU installed (CPU0 and CPU1)									
Quantity of memory installed	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**10**	**12**	**16**
CPU0_DIMM_A0	√	√	√	√	√	√	√	√	√	√
CPU0_DIMM_A1								√	√	√
CPU0_DIMM_B0		√	√	√	√	√	√	√	√	√
CPU0_DIMM_B1									√	√
CPU0_DIMM_C0					√	√	√	√	√	√
CPU0_DIMM_C1										√
CPU0_DIMM_D0				√	√	√	√	√	√	√
CPU0_DIMM_D1										√
CPU1_DIMM_E0	√	√	√	√	√	√	√	√	√	√
CPU1_DIMM_E1								√	√	√
CPU1_DIMM_F0			√	√	√	√	√	√	√	√
CPU1_DIMM_F1										√
CPU1_DIMM_G0						√	√	√	√	√
CPU1_DIMM_G1									√	√
CPU1_DIMM_H0							√	√	√	√
CPU1_DIMM_H1										√

Intel® Xeon® processor E5-2600v3 product families Support

Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s); Voltage (V); Slot Per Channel (SPC) and DIMM Per Channel (DPC)					
				1 Slot Per Channel	2 Slots Per Channel		3 Slots Per Channel		
				1DPC	1DPC	2DPC	1DPC	2DPC	3DPC
		4Gb	8Gb	1.2V	1.2V	1.2V	1.2V	1.2V	1.2V
RDIMM	SRx4	8GB	16GB	2133	2133	1866	2133	1866	1600
RDIMM	SRx8	4GB	8GB	2133	2133	1866	2133	1866	1600
RDIMM	DRx8	8GB	16GB	2133	2133	1866	2133	1866	1600
RDIMM	DRx4	16GB	32GB	2133	2133	1866	2133	1866	1600
LRDIMM	QRx4	32GB	64GB	2133	2133	2133	2133	2133	1600
LRDIMM 3DS[1]	8Rx4	64GB	128GB	2133	2133	2133	2133	2133	1600

NOTE 1: 1DPC => One dimm per channel

NOTE 2: 2DPC => Two dimm per channel

- Physical Ranks are used to calculate DIMM Capacity.
- Supported DRAM Densities are 4Gb, 8Gb.

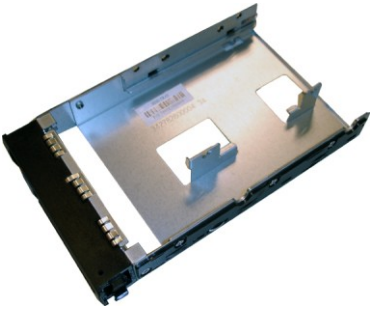
2.1.5 Installing Hard Drives

The GN70-B7086 can support up to eight (8) 3.5” or 2.5” hard drives. Follow these instructions to install a hard drive.

Warning!!! Always install the hard disk drive to the chassis after the chassis is secured on the rack.

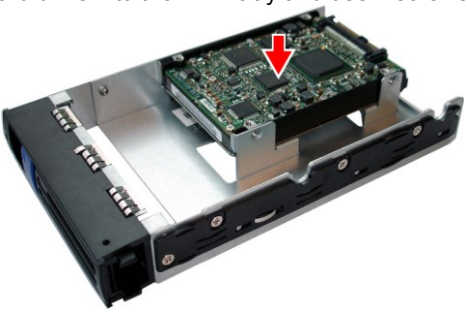
1. Press and hold the locking lever latch to pull the locking lever open.

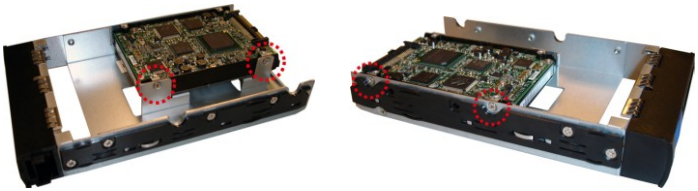
2. Slide the HDD tray out.



Option A: for 2.5” hard drives

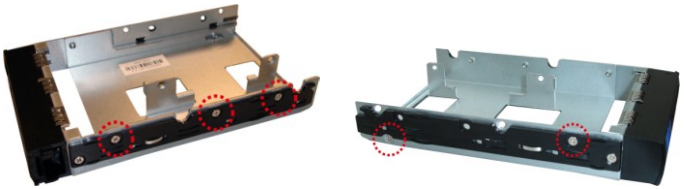
3. Place a 2.5” hard drive into the HDD tray and use 4 screws to secure the HDD.



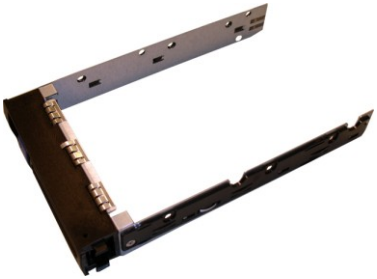


Option B: for 3.5” hard drives

4. Unscrew the drive bracket from the HDD tray.



5. Place a 3.5” hard drive into the drive tray and use 6 screws to secure the HDD.

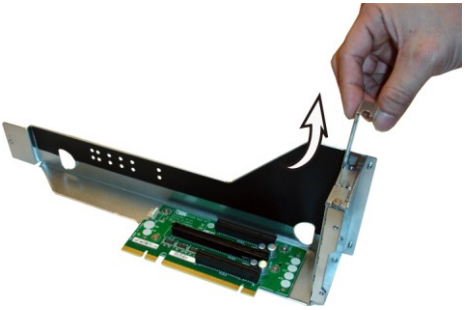


6. Reinsert the HDD tray into the chassis and press the locking lever to secure the tray.

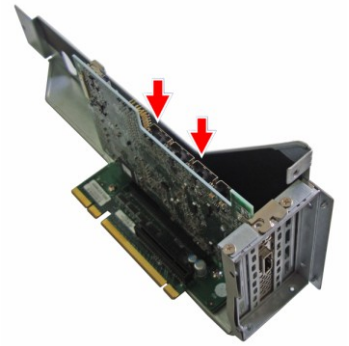
2.1.6 Installing the PCI-E Cards

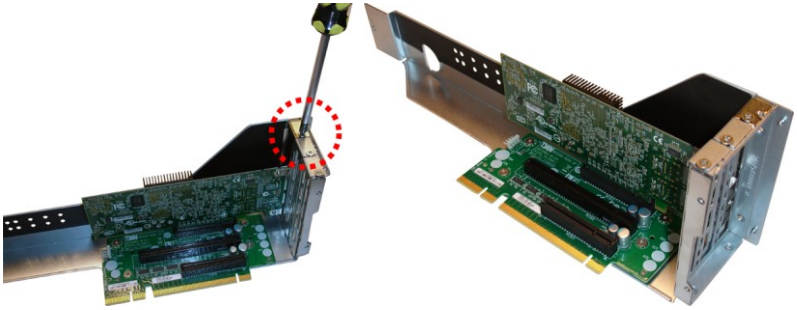
The GN70-B7086 supports **two** PCI-E Riser Card Brackets. A power cable (2x3p/2x4p) is required for GPU cards. Follow these instructions to install PCI-E cards.

1. Unscrew the PCI-E slot to take out the PCI bracket.



2. Insert the PCI-E card and securely screw as shown.





3. Repeat the same procedures for the second Riser Card Bracket.

NOTE: Please add a 4-pin power cable to connect PDB J4/J5 to riser card M7056-L24 PWR1/M7056-R24 PWR1, if the PCI-E card needs more than 75W power and has no power connector to supply power.

M7056-L24-3F

M7056-R24-3F

	Pin	Signal	Pin	Signal
J2 (PWR1)	1	+12V	2	GND
	3	GND	4	+5V

2.2 Rack Mounting

After installing the necessary components, the TYAN GN70-B7086 can be mounted in a rack using the supplied rack mounting kit.

Rear view	CRAL-0190 Rail Kit	Front view

2.2.1 Installing the Server in a Rack

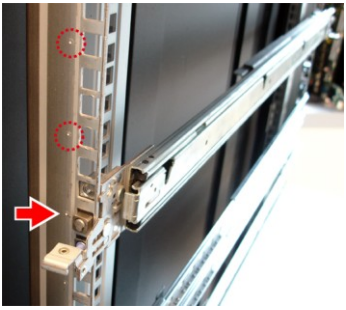
Follow these instructions to mount the TYAN GN70-B7086 into an industry standard 19” rack.

NOTE: Before mounting the TYAN GN70-B7086 in a rack, ensure that all internal components have been installed and that the unit has been fully tested. However, to make the installation easier, we suggest that you remove all HDD trays before you insert the chassis to the rack.

1. Position the rear of the sliding rail to the rear side of the rack. Make sure the mid-point of the rail align with the anchor point marked in red.

Rear

2. Repeat the same procedures for the front end of the rail.



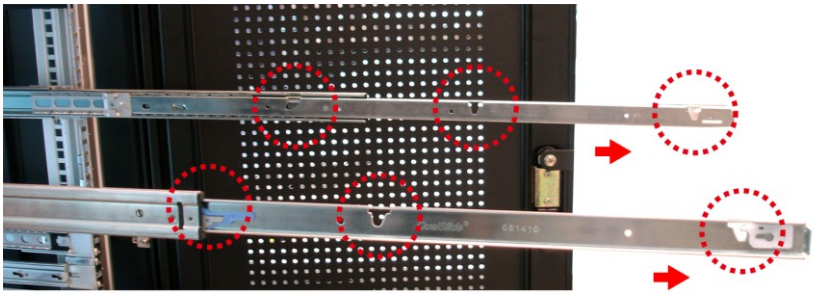
Front

3. Push the locking latch to secure the rail to the rack. Repeat the same procedures for the other rail.

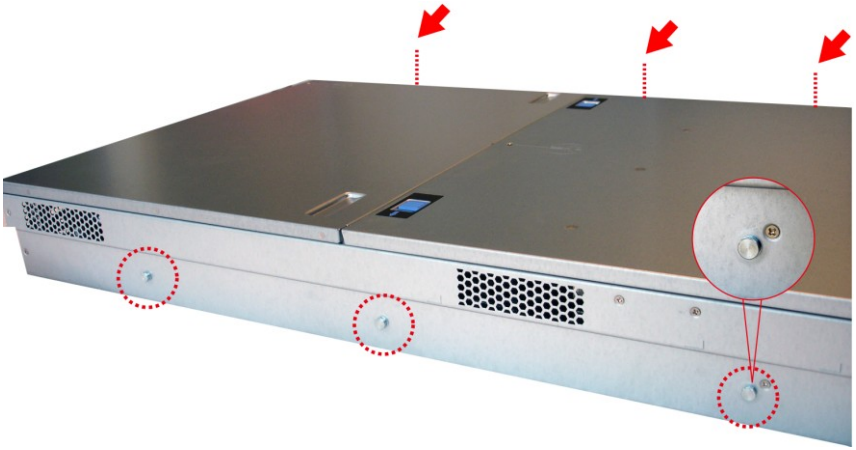
Left

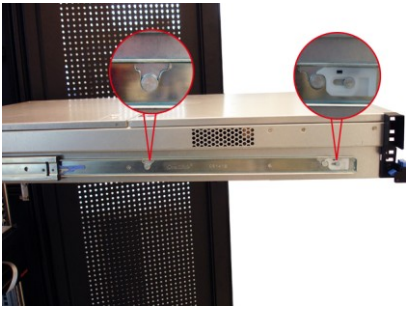
Right

4. Slide the inner rail to its full length. Note that to slide to its full length, push the locking tab of the rail upward and then the rail can slide freely. There are three holes on each rail which are used to hook and secure the chassis.



5. Align the studs on the chassis with the holes on the rails and make sure the chassis is securely hooked.





6. Push the chassis back into the rack.

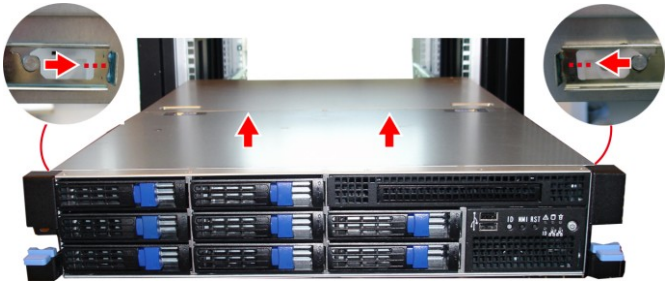
7. The installation is now complete.

2.2.2 Removing the Server from a Rack

Follow these instructions to remove the TYAN GN70-B7086 from an industry standard 19" rack.

1. Push the ears to pull the chassis forward.

2. Push forward the locking tabs on both rails to unhook the chassis from the rails.



3. Follow the steps described earlier in reverse to remove the chassis from the rack.

NOTE:
To avoid injury, it is strongly recommended that at least two people lift the TYAN GN70-B7086 to hook on or unhook from the rails.

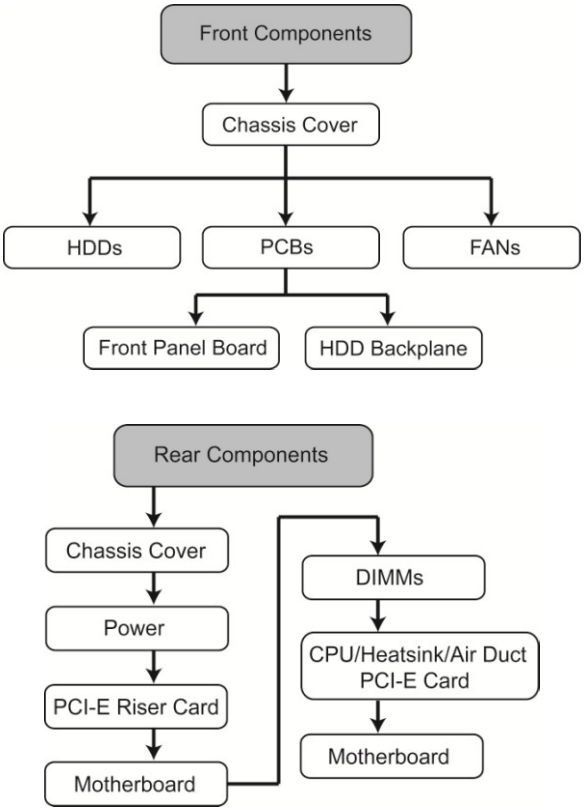
Chapter 3: Replacing Pre-Installed Components

3.1 Introduction

This chapter explains how to replace the pre-installed components, including the S7086 Motherboard, M1709G70-FPB Front Panel Board, PCI-E Riser Card, M1276G70-BP12E-8/M1276G70-BP12-8 SATA/SAS HDD Board, System Fan and Power Supply Unit etc.

3.2 Disassembly Flowchart

The following flowchart outlines the disassembly procedure.



3.3 Removing the Cover

Before replacing any parts you must remove the chassis cover. Follow Section ***2.1.1 Removing the Chassis Cover*** (page ***38***) to remove the cover of the GN70-B7086.

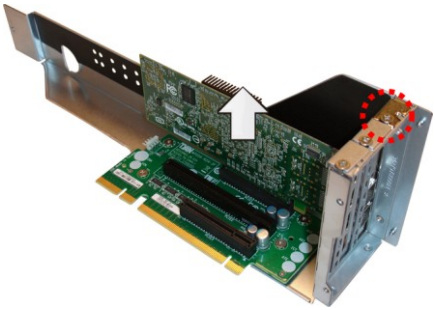
3.4 Replacing Motherboard Components

Follow these instructions to replace motherboard components, including the motherboard.

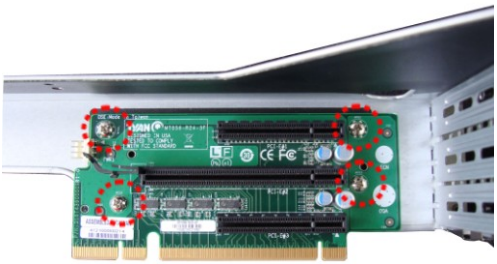
3.4.1 Replacing PCI-E Riser Card Cards

The GN70-B7086 has **two pre-installed PCI-E×16** riser cards.
Follow the instructions below to disassemble the M7056-L24-3F and M7056-R24-3F PCI-E riser cards.

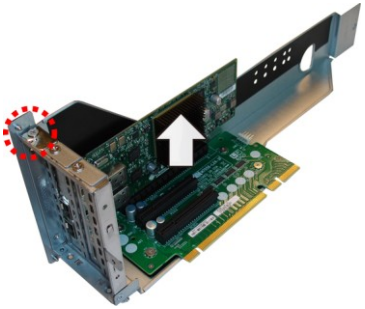
1. Unscrew to take out the PCI-E card.



2. Unscrew the M7056-R24-3F riser card to replace a new one if necessary.



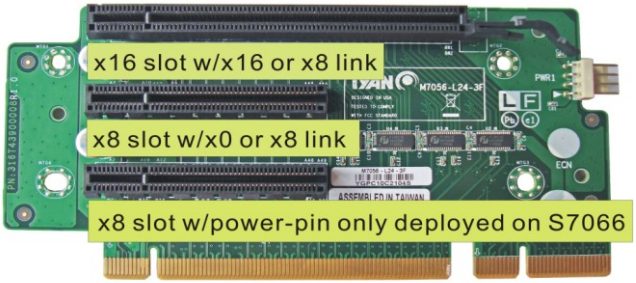
3. Repeat the same procedures for the second Riser Card Bracket.



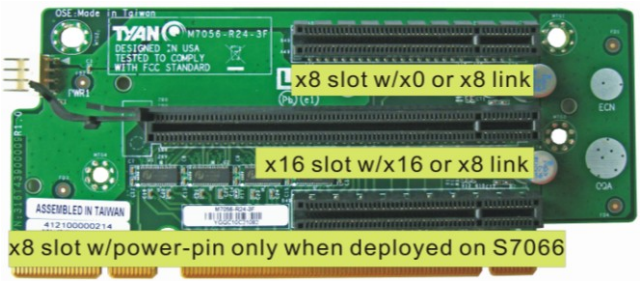
4. Unscrew the M7056-L24-3F riser card to replace a new one if necessary.

3.4.2 PCI-E Riser Cards Specification

M7056-L24-3F riser card



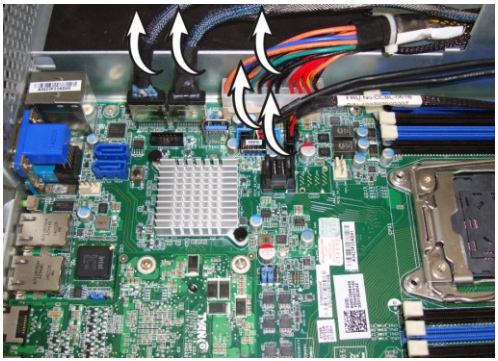
M7056-L24-3F riser card



3.4.3 Disconnecting All Motherboard Cables

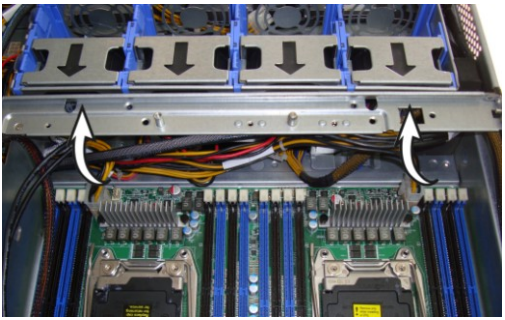
Before replacing the motherboard or certain components, remove cables connected to the motherboard. Follow these instructions to remove all cables.

1. Disconnect the Mini SAS, USB and 2x12pin power cables.



2. Disconnect the PSMI and front panel cables.

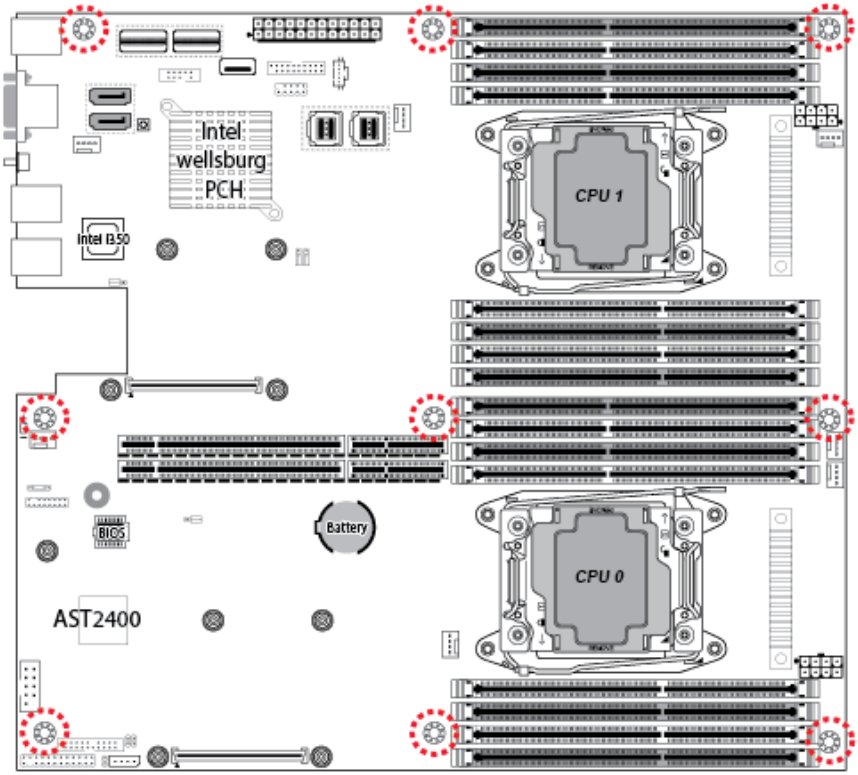
3. Disconnect the 2x4pin power cable.



3.4.4 Removing the Motherboard

After removing all of the aforementioned cables, follow the instructions below to remove the motherboard from the chassis.

1. Remove the heatsinks and processors if installed.
2. Remove the nine screws securing the motherboard to the chassis.



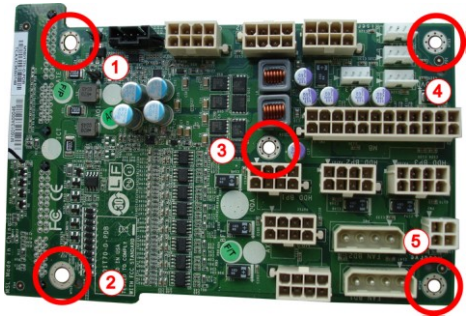
3. Carefully lift the motherboard from the chassis.

3.5 Replacing the Power Distribution Board

Follow these instructions to replace the M1601T70-D-PDB power distribution board.

1. Disconnect all cables.

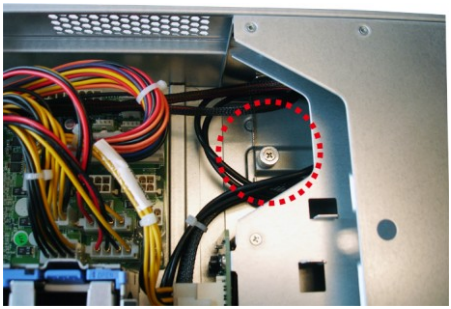
2. Unscrew to replace a new power distribution board.



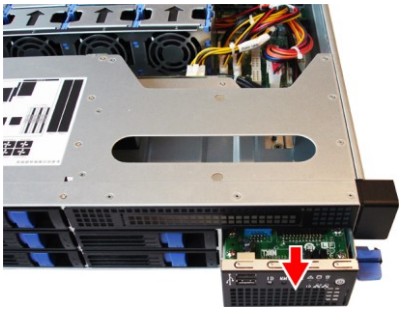
3.6 Replacing the Front Panel Board

Follow these instructions to replace the M1709G70-FPB Front Panel Board.

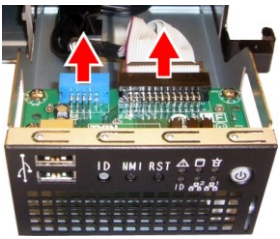
1. Unscrew to release the Front Panel Board Module.



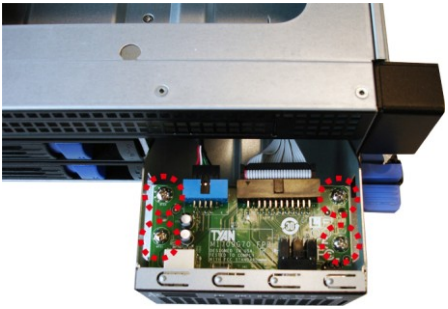
2. Push the Front Panel Board Module forward.



3. Disconnect the Front Panel Control and USB cables.



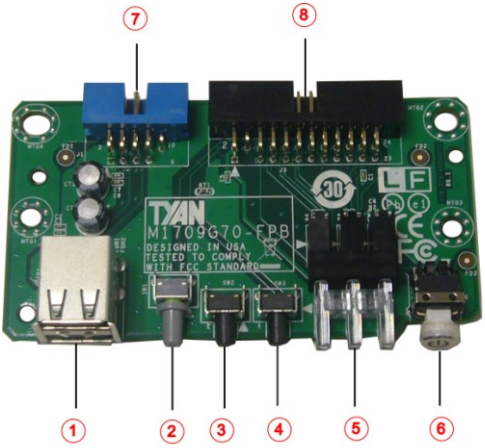
4. Unscrew the Front Panel Board to replace a new one.



5. Follow the steps described earlier in reverse to reinstall the Front Panel Board.

3.6.1 Front Panel Board Specifications

Here shows the M1709G70-FPB Front Panel Board in details.



1. USB Ports
2. ID Button
3. NMI Button
4. RESET Button
5. LAN1/LAN2/LAN3
6. Power On/Off Button with LED
7. USB Connector
8. Front Panel Connector

Form Factor	➢ 18.5MMx44.2MM, 4-Layer PCB
Connectors	➢ One 2x15 pin header for front panel connector of motherboard and HDD backplane board
LEDs	➢ Power On/Off Button with LED: Green ➢ ID LED Color: Blue ➢ System Warning LED: Amber ➢ System Fan Fail LED: Red ➢ LAN1/LAN2/LAN3: Green
Push buttons	➢ RESET button ➢ ID button ➢ Power On/Off button with LED ➢ NMI Button

3.6.2 Connector Pin Definition

Front Panel Connector (J3)

Definition	Pin	Pin	Definition
PW_LED+	1	2	VCC
Key	3	4	ID_LED+
PW_LED-	5	6	ID_LED-
HD/LAN3_LED+	7	8	SYS_FAULT1-
HD/LAN3_LED-	9	10	SYS_FAULT2-
PWR_SW+	11	12	LAN1_LED+
PWR_SW-	13	14	LAN1_LED-
RESET+	15	16	ICH_SMBDAT
RESET-	17	18	ICH_SMBCLK
ID_SW+	19	20	INTRU#
Temp_sensor	21	22	LAN2_LED+
EXT_INT	23	24	LAN2_LED-

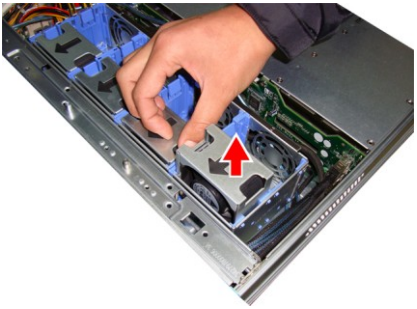
USB Connector (J1)

Definition	Pin	Pin	Definition
VCC	1	2	VCC
USB1-	3	4	USB2-
USB1+	5	6	USB2+
GND	7	8	GND
KEY	9	10	GND

3.7 Replacing the System Fan

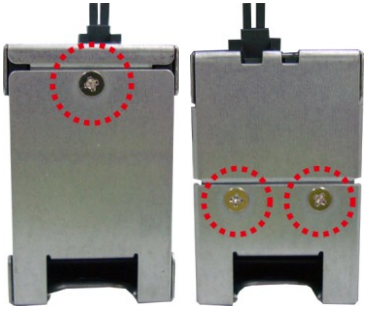
Follow these instructions to replace the system fan.

1. Press the latch in the direction as shown to lift up the fan from cage.

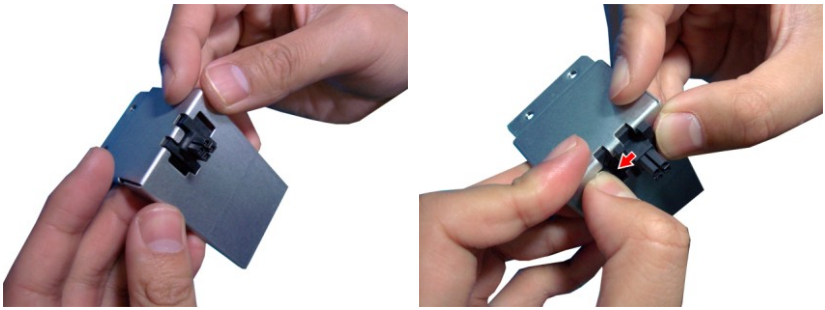


2. Take out the fan unit.

3. Loose the screws on both sides.



4. Push the latch in the direction as the arrow shown to release the fan from the iron holder.



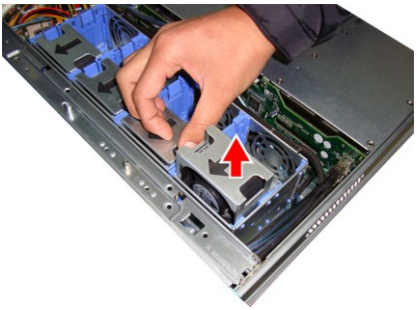
5. Remove the iron holder to replace a new fan.

6. After replacing a new one, put the fan unit back into the cage.

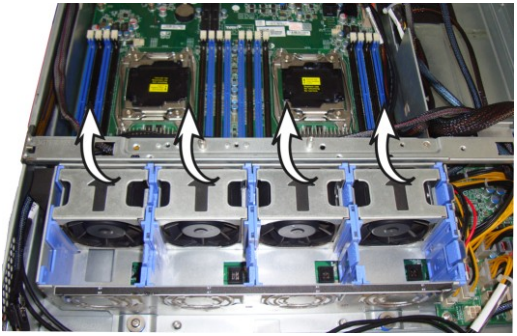
3.8 Replacing the Fan Backplane Board

Follow these instructions to replace the M1806G70-FB Fan Backplane Board in your system.

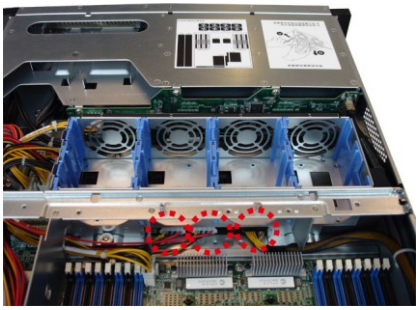
1. Press the latch in the direction as shown to lift up the fan from cage.



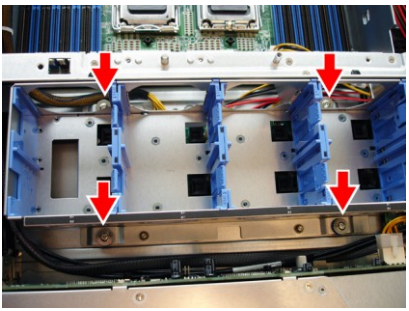
2. Remove all four fans from the chassis.



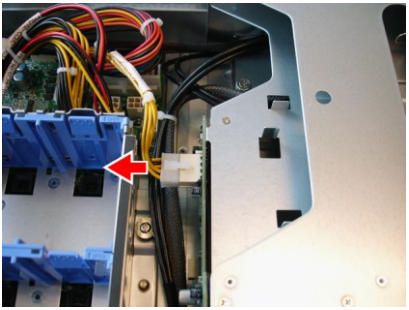
3. Disconnect all cables attached to the Fan Backplane Board.



4. Use a screw driver to unscrew the Fan Module.

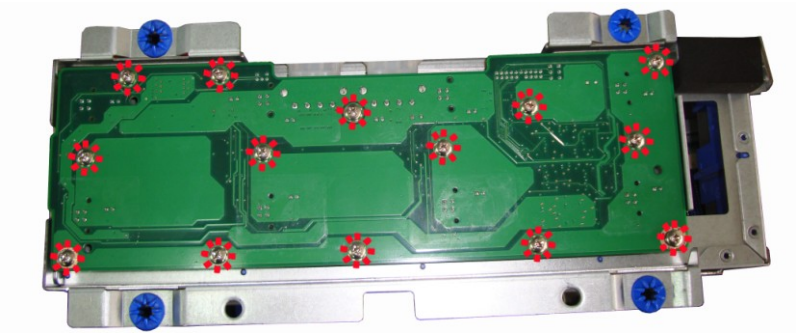


5. Disconnect the power and fan cables.



6. Lift up the Fan Module.

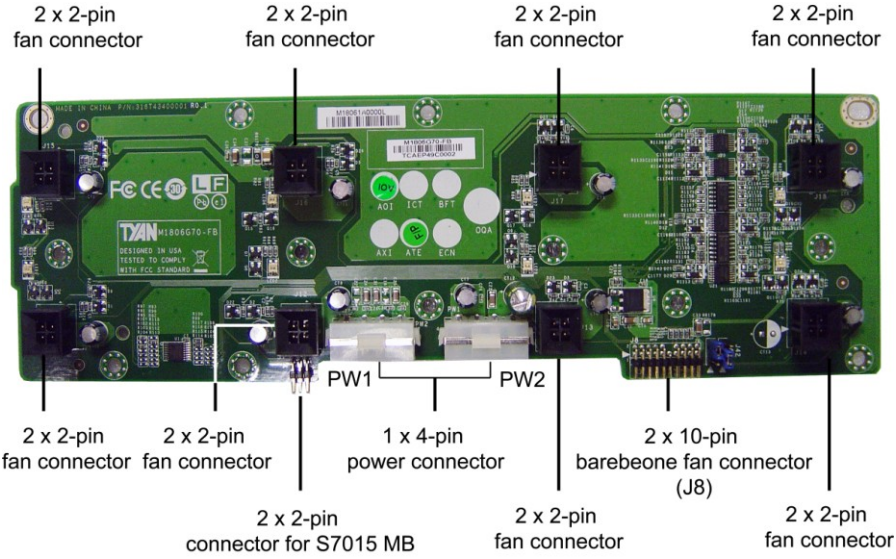
7. Release the 14 screws on the Fan Backplane Board to replace a new one.



8. Follow the steps described in reverse order to reinstall the fan cage.

3.8.1 Fan BP Board Specifications

Here shows the M1806G70-FB Fan Backplane Board in details.


2 x 2-pin fan connector
2 x 2-pin fan connector
2 x 2-pin fan connector
2 x 2-pin fan connector
PW1
PW2
2 x 2-pin fan connector
2 x 2-pin fan connector
1 x 4-pin power connector
2 x 10-pin barebeone fan connector (J8)
2 x 2-pin connector for S7015 MB
2 x 2-pin fan connector
2 x 2-pin fan connector

Form Factor	➢ 254 mm x 82 mm, 4-layer PCB
Integrated I/O	➢ (2) 1x4pin R/A Power Connector ➢ (8) 2x2pin Fan Connectors ➢ (1) 2x10pin Barebone Fan Connector ➢ (1) 2x2pin Connector for S7015

3.8.2 Fan BP Board LED Definitions

FAN Status	Green LED	Red LED
With Fan	On	Off
Without Fan	Off	On

3.8.3 Connector Pin Definitions

Power Connector (PW1/PW2)

Definition	Pin	Pin	Definition
+12V	**1**	**2**	GND
GND	**3**	**4**	+5V

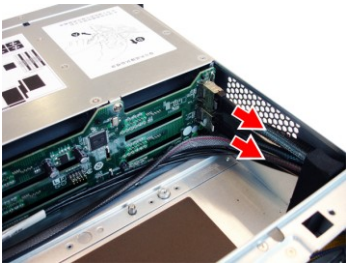
Barebone Fan Connector (J8)

Definition	Pin	Pin	Definition
FANIN1	**1**	**2**	FANIN6
FANIN2	**3**	**4**	FANIN7
FANIN3	**5**	**6**	FANIN8
FANIN4	**7**	**8**	SIO_FANIN1
FANIN5	**9**	**10**	SIO_ FANIN2
GND	**11**	**12**	Key
MB_PWM2	**13**	**14**	MB_PWM1
SIO_ FANIN3	**15**	**16**	SMBUS_3V3_DATA
SIO_ FANIN4	**17**	**18**	SMBUS_3V3_CLK
VDD_3.3_AUX	**19**	**20**	MB_PWM3

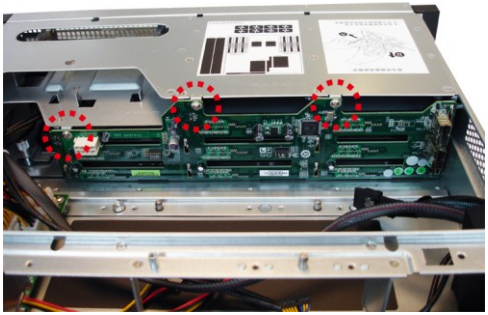
3.9 Replacing the HDD Backplane Board

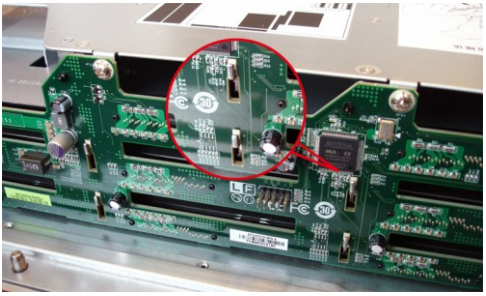
Follow these instructions to replace the M1276GN70_BP12E_8 HDD Backplane Board.

1. Refer to Section ***3.8 Replacing the Fan Backplane Board*** for how to remove the Fan Module. Disconnect the power cables attached to the HDD BP Board.



2. Unscrew the HDD BP Board. Remove the HDD BP Board from the hook.



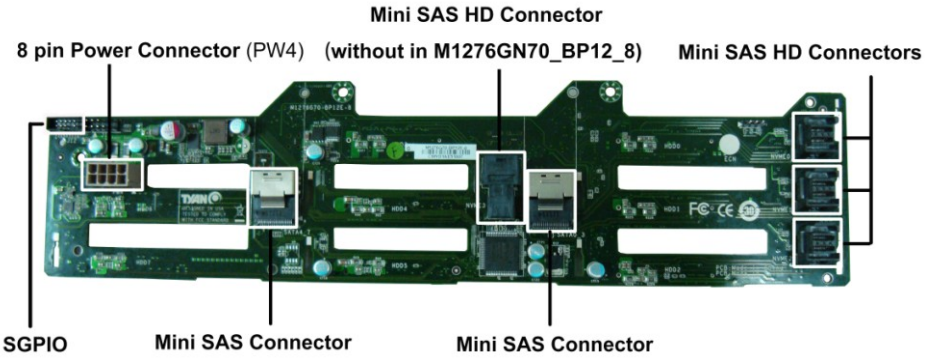


3. Replace a new HDD BP Board and reinstall it into the chassis following the steps in reverse.

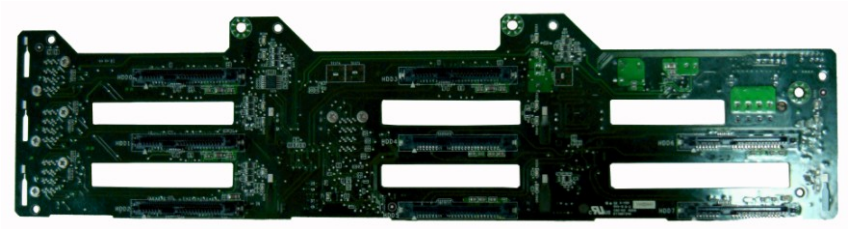
3.9.1 HDD BP Board Specifications

Here shows the M1276GN70_BP12E_8 Fan Backplane Board in details.

Front View



Rear View



Form Factor	➢ 332*82.5mm, 8 layer PCB
Integrated I/O	➢ One (1) 2x5 pin SGPIO connector Support (4) 68 pin SAS+PCIe connectors, (4) NVMe devices ➢ Support (4) 29 pin SAS connectors, (4) HDD devices Support (4) mini-SAS HD connectors, connect MB ➢ Support (2) mini-SAS connectors, connect MB
LEDs	➢ Support (8) HDD Failed LED Support (8) HDD Access LED

PW4 Pin definition

Definition	Pin	Pin	Definition
GND	1	5	+12V
GND	2	6	+12V
GND	3	7	+12V
GND	4	8	+12V

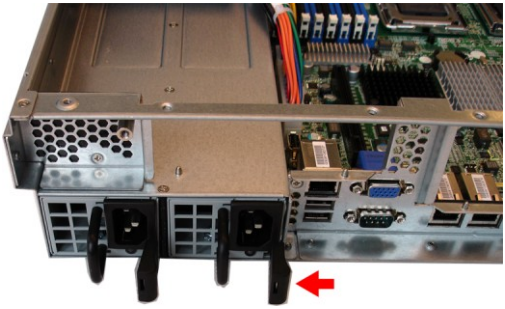
SGPIO Pin definition

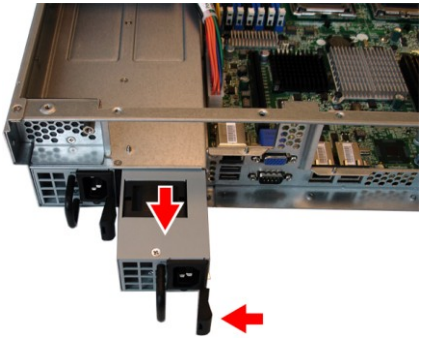
Definition	Pin	Pin	Definition
SMBUS_3V3_CLK	1	6	SAS_GPIO2
SAS_GPIO0	2	7	KEY
SMBUS_3V3_DATA	3	8	SAS_GPIO3
SAS_GPIO1	4	9	VCC3
GND	5	10	HD_ERR_LED

3.10 Replacing the Power Supply

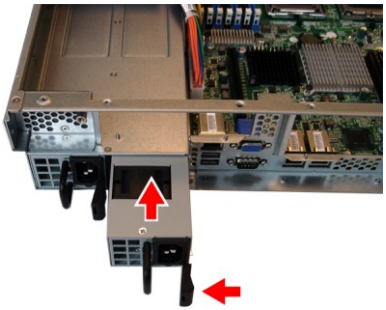
The system has two pre-installed 1,600W (80+ Platinum) Power Supply Units. Follow these instructions to replace the power supply units.

1. Press and hold the latch to pull the power supply out.





2. After replacing a new power supply, press and hold the latch to push the power supply back into the chassis.



Appendix I: Cable Connection Tables

1. Mini-SAS Cable

For **B7086G70V6E2HR** SKU

SAS/SATA Backplane M1276G70-BP12E-8	**Connects to**	**Motherboard**
SATA0_3	→	SATA0_3
SATA4_7	→	SSATA0_3
NVME0	→	SAS_HD1
NVME1	→	SAS_HD2

For **B7086G70V8HR** SKU

SAS/SATA Backplane M1276G70-BP12E-8	**Connects to**	**Motherboard**
SATA0_3	→	SATA0_3
SATA4_7	→	SSATA0_3

2. FAN Control Cable

FAN Board M1806G70-FB	**Connects to**	**Motherboard**
J8	→	FAN_HD1

3. Front Panel Control Cable

Front Panel Board M1709G70-FPB	**Connects to**	**Motherboard**
J3	→	FP_HD1

4. USB Cable

Front Panel Board M1709G70-FPB	**Connects to**	**Motherboard**
J1	→	USB2_HD1

5. Power Cable

Power Board M1601T70-D-PDB	**Connects to**	**Motherboard**
PW1 (MB)	→	PW1
PATX1 (MB1)	→	PW2
PATX2 (MB2)	→	PW3
J7 (PSMI)	→	PSMI_HD1

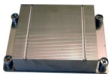
6. Power Cable

Power Board M1601T70-D-PDB	Connects to	FAN Board M1806G70-FB
PW4 (FAN BD1)	→	PW2
PW5 (FAN BD2)	→	PW1

7. Power Cable

Power Board M1601T70-D-PDB	Connects to	SAS/SATA Backplane M1276G70-BP12E-8
PATX6 (HDD BP1)	→	PW4

Appendix II: FRU Parts Table

Item	Model Number	Part Number	Picture	Description
Power Supply	FRU-PS-0100	471100000247		TF-POWER SUPPLY;SBU,770 W,DELTA,DPS-770GB C,(S0F),1U MODULE,REV.S0F
FAN	CFAN-0330	336252012309		12000RPM,60*60*38mm,4pin
Heatsink	FRU-TH-0140	343T51200003		TF-HEATSINK;SBU,CU+VC,SOLDERING,2011-1U-SPECIAL-PASSIVE-HEATSINK, 0P305224, 108.0X82.0X25.0 MM, SCREW,GF83-B7094
PCBA	M7056-R24-3F	411T43900115		PCI-E x16 2U Riser Card
	M7056-L24-3F	411T43900114		PCI-E x16 2U Riser Card
	M7086-R24-3F	5411T5290004		TF-Riser Card;SBU,M7086-R24-3F,R01,TYAN,GN70-B7086
Rack Mounting	CRAL-0190	452T44600001		GN70, 泛亞 420-11599
Cable	CCBL-0290	332810000281		A/C power cord, L=1830mm, EU type
	CCBL-0280	332810000397		Power cord; US, 125V, 18AWGX3C, L:1800mm
	CCBL-0688	422797000003		TF-CABLE ASSY;SBU,MINI-SAS CABLE,SHORT MINI-SAS 36P/ SHORT MINI-SAS 36P,L=800MM

NOTE

Appendix III: Fan and Temp Sensors

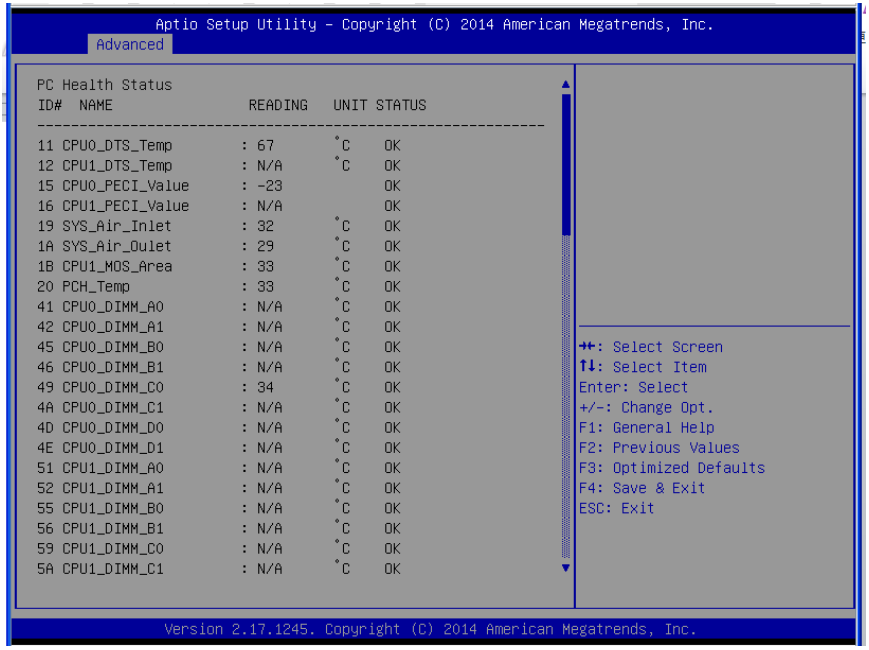
This section aims to help readers identify the locations of some specific FAN and Temp Sensors on the motherboard. A table of BIOS Temp sensor name explanation is also included for readers' reference.

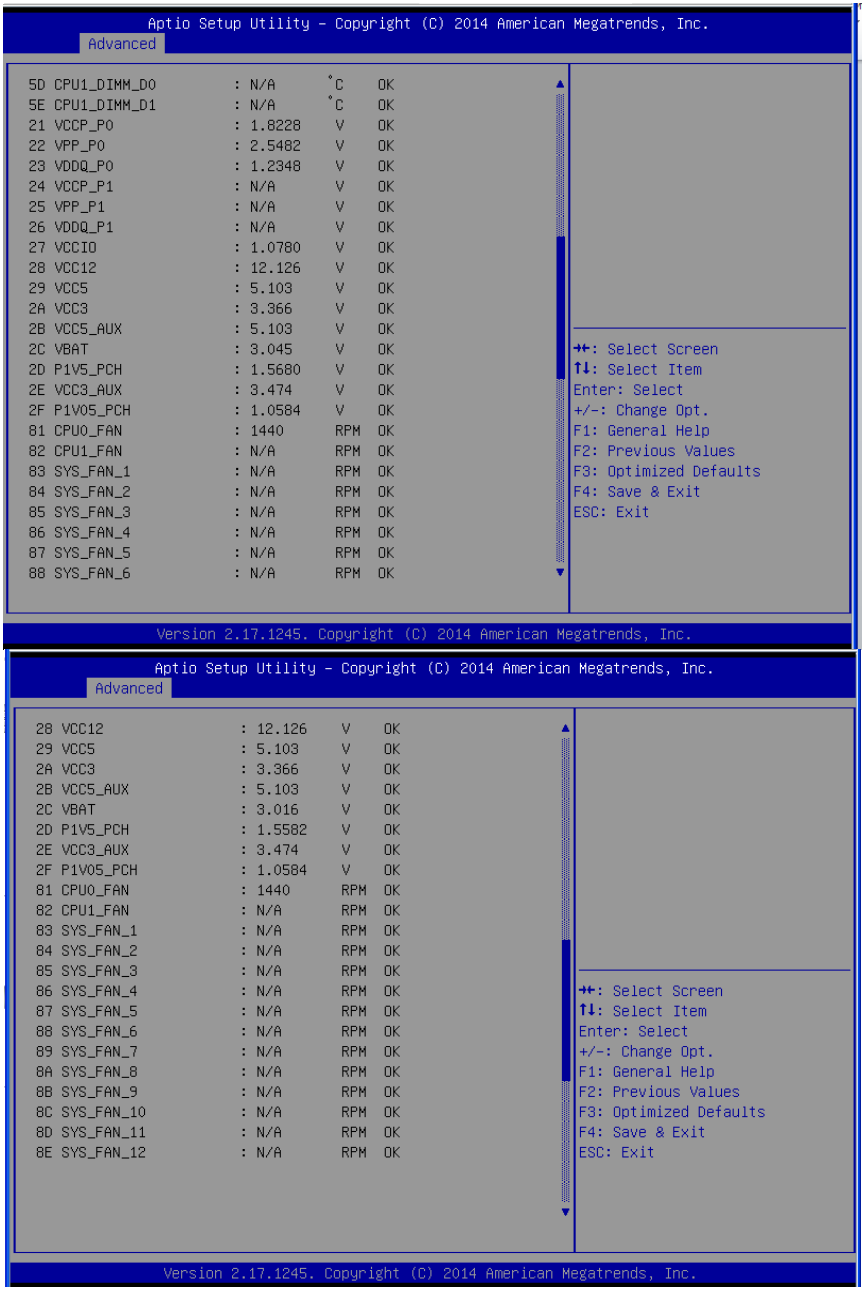
NOTE: The red dot indicates the sensor.

Fan and Temp Sensor Location:

1. Fan Sensor: SYS_FAN_1, SYS_FAN_2, SYS_FAN_3 and SYS_FAN_4. They detect the fan speed (rpm)
2. Temp Sensor: SYS_Air_Inlet, and M/B_Inlet_Temp. They detect the system temperature around.
   NOTE: The system temperature is measured in a scale defined by **Intel**, not in Fahrenheit or Celsius.

BIOS Temp Sensor Name Explanation:


Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
Advanced
PC Health Status
ID# NAME READING UNIT STATUS
11 CPU0_DTS_Temp : 67 °C OK
12 CPU1_DTS_Temp : N/A °C OK
15 CPU0_PECI_Value : -23 OK
16 CPU1_PECI_Value : N/A OK
19 SYS_Air_Inlet : 32 °C OK
1A SYS_Air_Oulet : 29 °C OK
1B CPU1_MOS_Area : 33 °C OK
20 PCH_Temp : 33 °C OK
41 CPU0_DIMM_A0 : N/A °C OK
42 CPU0_DIMM_A1 : N/A °C OK
45 CPU0_DIMM_B0 : N/A °C OK
46 CPU0_DIMM_B1 : N/A °C OK
49 CPU0_DIMM_C0 : 34 °C OK
4A CPU0_DIMM_C1 : N/A °C OK
4D CPU0_DIMM_D0 : N/A °C OK
4E CPU0_DIMM_D1 : N/A °C OK
51 CPU1_DIMM_A0 : N/A °C OK
52 CPU1_DIMM_A1 : N/A °C OK
55 CPU1_DIMM_B0 : N/A °C OK
56 CPU1_DIMM_B1 : N/A °C OK
59 CPU1_DIMM_C0 : N/A °C OK
5A CPU1_DIMM_C1 : N/A °C OK
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.17.1245. Copyright (C) 2014 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
Advanced
5D CPU1_DIMM_D0 : N/A °C OK
5E CPU1_DIMM_D1 : N/A °C OK
21 VCCP_P0 : 1.8228 V OK
22 VPP_P0 : 2.5482 V OK
23 VDDQ_P0 : 1.2348 V OK
24 VCCP_P1 : N/A V OK
25 VPP_P1 : N/A V OK
26 VDDQ_P1 : N/A V OK
27 VCCIO : 1.0780 V OK
28 VCC12 : 12.126 V OK
29 VCC5 : 5.103 V OK
2A VCC3 : 3.366 V OK
2B VCC5_AUX : 5.103 V OK
2C VBAT : 3.045 V OK
2D P1V5_PCH : 1.5680 V OK
2E VCC3_AUX : 3.474 V OK
2F P1V05_PCH : 1.0584 V OK
81 CPU0_FAN : 1440 RPM OK
82 CPU1_FAN : N/A RPM OK
83 SYS_FAN_1 : N/A RPM OK
84 SYS_FAN_2 : N/A RPM OK
85 SYS_FAN_3 : N/A RPM OK
86 SYS_FAN_4 : N/A RPM OK
87 SYS_FAN_5 : N/A RPM OK
88 SYS_FAN_6 : N/A RPM OK
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.17.1245. Copyright (C) 2014 American Megatrends, Inc.
Aptio Setup Utility – Copyright (C) 2014 American Megatrends, Inc.
Advanced
28 VCC12 : 12.126 V OK
29 VCC5 : 5.103 V OK
2A VCC3 : 3.366 V OK
2B VCC5_AUX : 5.103 V OK
2C VBAT : 3.016 V OK
2D P1V5_PCH : 1.5582 V OK
2E VCC3_AUX : 3.474 V OK
2F P1V05_PCH : 1.0584 V OK
81 CPU0_FAN : 1440 RPM OK
82 CPU1_FAN : N/A RPM OK
83 SYS_FAN_1 : N/A RPM OK
84 SYS_FAN_2 : N/A RPM OK
85 SYS_FAN_3 : N/A RPM OK
86 SYS_FAN_4 : N/A RPM OK
87 SYS_FAN_5 : N/A RPM OK
88 SYS_FAN_6 : N/A RPM OK
89 SYS_FAN_7 : N/A RPM OK
8A SYS_FAN_8 : N/A RPM OK
8B SYS_FAN_9 : N/A RPM OK
8C SYS_FAN_10 : N/A RPM OK
8D SYS_FAN_11 : N/A RPM OK
8E SYS_FAN_12 : N/A RPM OK
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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BIOS Temp Sensor	Name Explanation
CPU0_DTS_Temp	Temperature of the CPU0 Digital Temperature Sensor
CPU1_DTS_Temp	Temperature of the CPU1 Digital Temperature Sensor
CPU0_PECI_Value	Temperature of the CPU0 Platform Environment Control Interface
CPU1_PECI_Value	Temperature of the CPU1 Platform Environment Control Interface
SYS_Air_Inlet	Temperature of the PCH Area
SYS_Air_Outlet	Temperature of the M/B Air Inlet Area
CPU1_MOS_Area	Temperature of the LAN Chip Area
PCH_Temp	Temperature of GPU0
CPU0_DIMM_A0	Temperature of CPU0 DIMM A0 Slot
CPU0_DIMM_A1	Temperature of CPU0 DIMM A1 Slot
CPU0_DIMM_B0	Temperature of CPU0 DIMM B0 Slot
CPU0_DIMM_B1	Temperature of CPU0 DIMM B1 Slot
CPU0_DIMM_C0	Temperature of CPU0 DIMM C0 Slot
CPU0_DIMM_C1	Temperature of CPU0 DIMM C1 Slot
CPU0_DIMM_D0	Temperature of CPU0 DIMM D0 Slot
CPU0_DIMM_D1	Temperature of CPU0 DIMM D1 Slot
CPU1_DIMM_A0	Temperature of CPU1 DIMM A0 Slot
CPU1_DIMM_A1	Temperature of CPU1 DIMM A1 Slot
CPU1_DIMM_B0	Temperature of CPU1 DIMM B0 Slot
CPU1_DIMM_B1	Temperature of CPU1 DIMM B1 Slot
CPU1_DIMM_C0	Temperature of CPU1 DIMM C0 Slot
CPU1_DIMM_C1	Temperature of CPU1 DIMM C1 Slot
CPU1_DIMM_D0	Temperature of CPU1 DIMM D0 Slot
CPU1_DIMM_D1	Temperature of CPU1 DIMM D1 Slot
BIOS FAN Sensor	**Name Explanation**
CPU0_FAN	Fan speed of CPU0_FAN
CPU1_FAN	Fan speed of CPU1_FAN
SYS_FAN_1	Fan speed of SYS_FAN_1
SYS_FAN_2	Fan speed of SYS_FAN_2
SYS_FAN_3	Fan speed of SYS_FAN_3
SYS_FAN_4	Fan speed of SYS_FAN_4
SYS_FAN_5	Fan speed of SYS_FAN_5
SYS_FAN_6	Fan speed of SYS_FAN_6
SYS_FAN_7	Fan speed of SYS_FAN_7
SYS_FAN_8	Fan speed of SYS_FAN_8
SYS_FAN_9	Fan speed of SYS_FAN_9
SYS_FAN_10	Fan speed of SYS_FAN_10
SYS_FAN_11	Fan speed of SYS_FAN_11

SYS_FAN_12	Fan speed of SYS_FAN_12

Appendix IV: Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequence).

If these options are not available for you then MiTAC International Corporation can help. Besides designing innovative and quality products for over a decade, MiTAC has continuously offered customers service beyond their expectations. TYAN's website (http://www.tyan.com) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find their latest software and operating system components to keep their systems running as powerful and productive as possible. MiTAC also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, MiTAC serves multiple market segments with the industry's most competitive services to support them.

Please feel free to contact us directly for this service at tech-support@tyan.com

Help Resources:

1. See the beep codes section of this manual.
2. See the TYAN's website for FAQ's, bulletins, driver updates, and other information: http://www.tyan.com
3. Contact your dealer for help before calling TYAN.

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

NOTE:

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid.
TYAN will pay to have the board shipped back to you.

TYAN® GN70-B7086 Service Engineer's Manual V1.0

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